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A GUIDE TO GYNÆCOLOGY
IN GENERAL PRACTICE

OXFORD MEDICAL PUBLICATIONS

A GUIDE TO

GYNÆCOLOGY

IN GENERAL PRACTICE

BY

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IN CHARGE OF ITS MILITARY HOSPITAL AT CLACTON-ON SEA; SURGEON TO THE CHELSEA
HOSPITAL FOR WOMEN; SENIOR OBSTETRIC SURGEON TO THE CITY OF LONDON
LYING-IN HOSPITAL, GYNÆCOLOGICAL SURGEON TO THE ELTHAM HOSPITAL;
CONSULTING SURGEON TO THE CLACTON-ON SEA HOSPITAL, EXAMINER IN
MIDWIFERY AND GYNÆCOLOGY TO THE UNIVERSITIES OF CAMBRIDGE
AND LONDON, AND SOMETIME EXAMINER TO THE UNIVERSITIES OF
OXFORD AND LEEDS, THE CONJOINT BOARD OF ENGLAND,
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LATE SURGEON IN CHARGE OF ITS MILITARY HOSPITAL AT CLACTON-ON SEA; SURGEON TO
THE CHELSEA HOSPITAL FOR WOMEN; GYNÆCOLOGICAL SURGEON TO THE MILLER
HOSPITAL, THE PUTNEY HOSPITAL, AND THE HOSPITAL FOR NERVOUS DISEASE,
MAIDA VALE; CONSULTING SURGEON TO THE CLACTON-ON-SEA HOSPITAL;
EXAMINER IN MIDWIFERY AND GYNÆCOLOGY TO THE CONJOINT BOARD
OF ENGLAND; LATE EMDEN RESEARCH SCHOLAR AND MERCERS'
PRIZEMAN, MIDDLESEX HOSPITAL CANCER INVESTIGATION
INSTITUTE; LATE HUNTERIAN PROFESSOR IN PATHOLOGY
AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

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PREFACE TO THE SECOND EDITION.

THE Second Edition, which has been rendered necessary by the gratifying reception accorded to this book, has enabled us thoroughly to revise the whole text.

The Section dealing with Criminal Abortion, a subject which in certain of its aspects is of the greatest importance to the practitioner, has been very exhaustively reconsidered by us, and as a result we have rewritten that part of it dealing with the course to be advised the practitioner who has the misfortune to be summoned to attend one of these cases. In this connection we wish to express our thanks to Mr. C. F. Lowenthal for the assistance he has given us.

New sections on radium and X-ray treatment have been added.

Dr. Dupuy, with his accustomed skill, has furnished the new illustrations necessitated by the enlargement of the text.

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AUTHORS' PREFACE.

THE student, by means of text-books and lectures, is taught the main facts of gynæcology, but his clinical training in this important speciality is necessarily limited.

This book is written for the practitioner, to assist him in supplementing the academic knowledge of the subject acquired during studentship with a practical understanding of its clinical intricacies.

Just as a familiar mountain or hill may be difficult to recognize from an unusual point of view, so the same disease or disorder may present itself in varying aspects and thus lead to difficulties in its diagnosis. In no department of medicine is this more noticeable than in gynæcology.

To help the practitioner to cope with the many problems thus arising, we have employed an extensive system of cross-references, to which we would specially draw the reader's attention.

The subject-matter of the work is arranged in a natural sequence. Part I. is occupied with Examinational Methods ; Parts II. and III. are concerned with a consideration of the Significance of Symptoms and the Interpretation of Physical Signs, whereby the materials for a correct diagnosis should be obtained ; and in Part IV. the Methods of Treatment of the various disorders are described. We have deliberately omitted all details of operative technique from this part : those of our readers who are accustomed to operate will find these matters discussed in our *Textbook of Gynæcological Surgery* or other similar works.

Finally in Part V. the Medico-legal aspect of gynæcology is dwelt upon. This phase of the subject has never been adequately dealt with in British works on the Diseases of Women, and we venture to think that its inclusion will enhance the usefulness of this book.

We are particularly indebted to Mr. C. F. Lowenthal for the great assistance he has given us in the preparation of certain sections of Part V. Our best thanks are also due to Dr. A. G. Bateman, General Secretary of the Medical Defence Union, for kindly reading the proof sheets of the section on " Claims for Compensation," and to Dr. George Dupuy for the care he has taken with the drawing of the illustrations.

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PART I.

THE EXAMINATION OF THE PATIENT.

WOMEN, the subjects of symptoms arising, or supposedly arising, from their genital organs, are more than any other class of patient apt to be irrelevant and misleading when questioned concerning them.

For this reason, in no other branch of surgery is it so important to found diagnosis and treatment on the ascertained signs revealed by physical examination.

Gynæcological patients may be divided into two classes : the first comprises those in whom some gross abnormality or disease explaining their symptoms is discovered ; the second, those in whom nothing obviously amiss with their genital organs is found, but who yet complain of a whole host of symptoms, mostly subjective, evanescent, or protean in character, and without influence on their general health.

The treatment of the first class is the satisfactory side of gynæcology, which thus exercised is an exact science and an almost purely surgical art.

The treatment of the second class is its unsatisfactory side, for unless the cause of the symptoms is known all measures are at the best empirical, and unless conscientiously applied may easily overstep the boundary into sheer charlatanism.

To diagnose " ovaritis," or " congestion of the womb," or " falling of the womb " in the absence of the physical signs of these conditions, and merely because the patient complains of pain in her side, lower abdomen or back, as the case may be, is a practice to be deprecated.

The blister, the glycerine plug, or the pessary prescribed under such

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a diagnosis may indeed be followed by the disappearance of the symptoms, but the practitioner should remember that in these cases *post hoc* is not by any means necessarily *propter hoc*, and that in this type of patient any treatment, no matter how illogical or ridiculous, would produce a certain percentage of " cures."

THE HISTORY.

The questions asked the patient, before the physical examination is proceeded with, should therefore be few and limited to certain important points. In particular the practitioner should avoid the bad habit (too often encouraged in medical schools) of attempting to make a diagnosis from the history alone before examining the patient. Such a proceeding is not only a futile waste of time, but by biasing the judgment renders a correct interpretation of the physical signs less likely.

One question asked after the examination is worth twenty asked before it.

The following seven questions constitute a fair preliminary interrogatory for routine use in the majority of cases :—

1. *What do you complain of ?*

The practitioner should try and get a straight answer to this. Patients in their reply often anticipate a diagnosis by stating they have a " misplacement " or an " ulcerated womb."

If the reply is " pain," try to get an explicit statement as to its seat ; if " bleeding," its relation to the menstrual flow.

2. *How long have you had it ?*

This is an important question. The patient who states she has "suffered agony for years " stands convicted of exaggeration. In general, the more serious the condition the shorter the duration of symptoms.

3. *The frequency and duration of the menses and the date of the last ?*

In dealing with gynæcological patients the question of pregnancy should always be kept in mind. Women, thinking of their usual habit, will frequently state they are " regular " when no " period " has occurred for several months.

The adoption of a formula—thus, $P\frac{5}{28}$, meaning that the period lasts five days and recurs every twenty-eight days—is useful. The menses may be abnormal either as regards duration or frequency.

4. *Whether married, and if so, how long ?*

The practitioner should not forget that a negative to this question does not exclude the results of sexual intercourse.

5. *The number of pregnancies, the character of the confinements, and the date of the last one?*

A question needing no comment.

6 *Is there a " discharge "?*

If the answer is in the affirmative, ask its character and duration.

7. *Is there any trouble with the bladder or bowels?*

These questions will in general suffice until the results of the physical
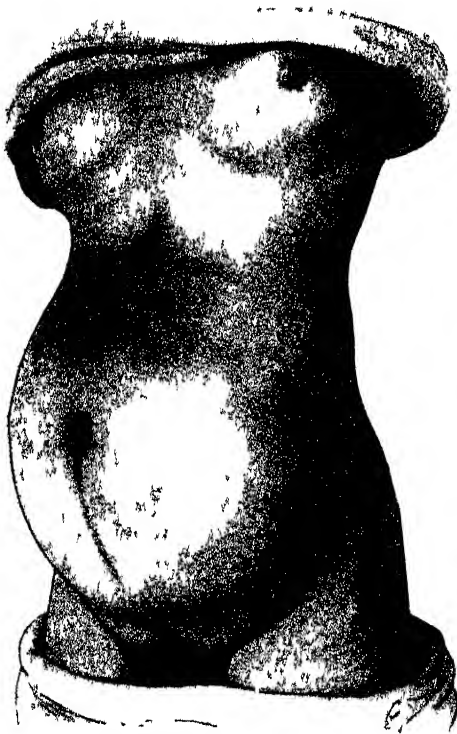
FIG. 1.—ABDOMINAL CONTOUR IN OBESITY.   FIG. 2.—ABDOMINAL CONTOUR WITH ASCITES.
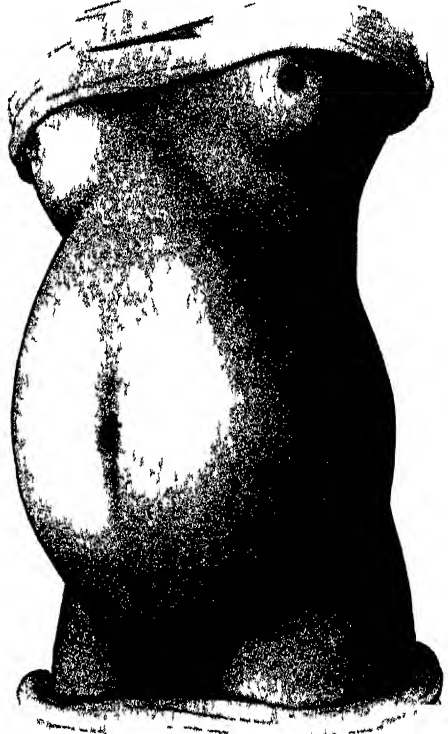
examination give a guide as to the direction which any further interrogation should take.

PRELIMINARY INSPECTION.

The practitioner should take note of the general appearance, colour, and contour of his patient, a brief inspection of her teeth and tongue should be made, the pulse felt, and if necessary her temperature taken.

The position of the apex beat of the heart should always be noted immediately before examining the abdomen, and the stethoscope should be used to ascertain the state of the lungs and heart.
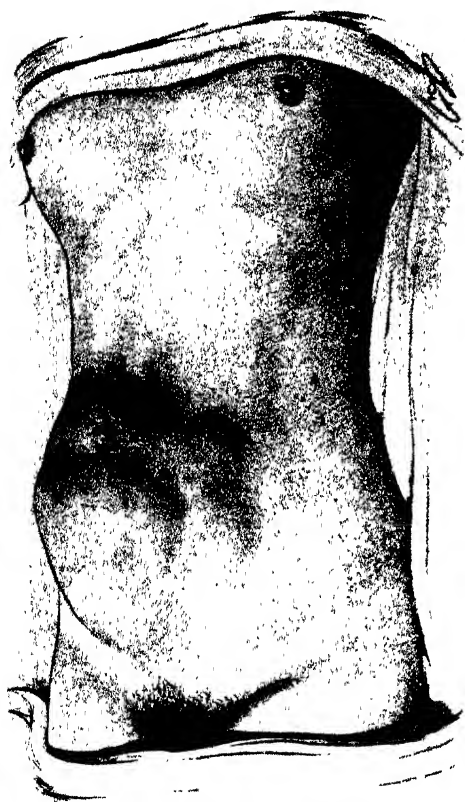
FIG. 3.—ABDOMINAL CONTOUR WITH A UTERINE MYOMA.   FIG. 4.—ABDOMINAL CONTOUR WITH AN OVARIAN C

ABDOMINAL EXAMINATION.

Abdominal examination may be conducted with the patient either in the lying or standing posture.

ABDOMINAL EXAMINATION IN THE LYING POSTURE.

The patient should lie on her back with the shoulders slightly raised, and if additional flaccidity of the abdominal wall is desired the legs should be drawn up.

Inspection. —Obesity produces a general enlargement of the abdomen, which, however, is more marked in front because of the presence of the omentum. This may not be noticeable if great flaccidity coexists. The umbilicus is deepened (Fig. 1).

Flatulent distension of the intestines may produce a uniform enlargement or one limited to particular areas. Thus distension of the

FIG. 5.—ABDOMINAL CONTOUR WITH OVARIAN CYST, COMPLICATED BY ADHESIONS.
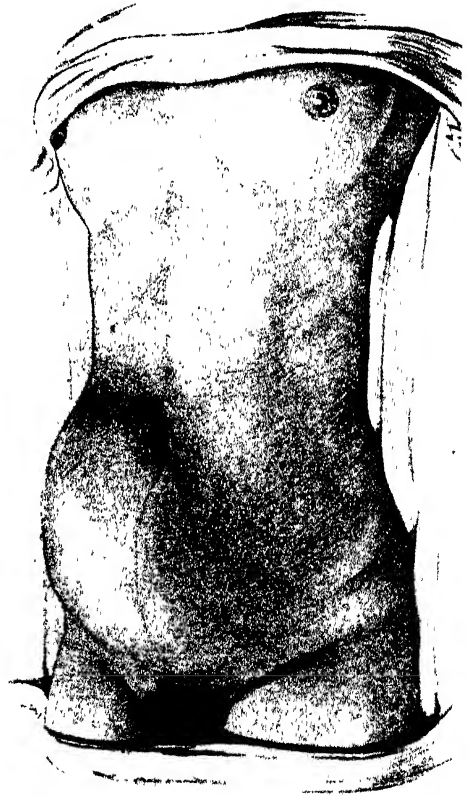
FIG. 6.—ABDOMINAL CONTOUR WITH A CYST OF THE RIGHT BROAD LIGAMENT.

small intestines causes protuberance in front, of the large in towards the sides and particularly just above the groins. In thin persons the distended coils of gut may be seen through the abdominal wall. It is noteworthy that in great distension of the cæcum this viscus may lie in the middle line or even somewhat to the left of it. Tumours of the bowel, and notably those of the transverse colon, frequently sag down to the brim of the pelvis and may be seen through the lower abdominal

wall in thin patients. Similarly, a greatly distended stomach may show as a projection below the umbilicus.

Fig 7.—Palpation of the Lower Abdomen.

Fig 8 —Palpating the Right Iliac Region

In intestinal obstruction peristalsis may be visible, but it may also be seen in persons with very attenuated parietes quite apart from obstruction.

There is a type of abdomen very constantly associated with cases of chronic dyspepsia whether dependent upon ulceration or not. It is retracted, hollowed, and "board-like."
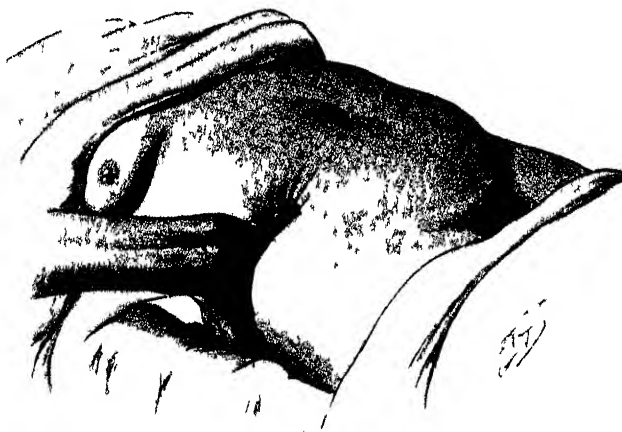
FIG. 9.—PALPATION NEPHROLEPTIQUE. GRASPING THE LOIN.

FIG. 10.—PALPATION NEPHROLEPTIQUE. THE KIDNEY IS FIXED
BELOW THE THUMB

Ascites produces a general enlargement somewhat more marked in the loins, especially if the abdominal wall be flaccid. The umbilicus is flattened (Fig. 2).

Solid tumours in general produce a more marked and circumscribed

protuberance than do fluid tumours, because the latter adapt themselves more readily to the curve of the abdominal wall. Thus uterine myomata or solid growths of the ovary often show as very obvious projections, the upper limits of which drop rapidly to the general level of the ab-

FIG 11 —PALPATION OF THE UPPER ABDOMEN.

FIG 12 —PALPATING THE GALL BLADDER.

dominal wall (Fig. 3). Ovarian cysts, on the other hand, produce a more gentle and uniform curve (Fig. 4). When, by reason of adhesions, free extension of the cyst upwards is prevented, the upper edge of the contour may be abrupt (Fig. 5). The pregnant uterus (itself a cyst) resembles in contour an ovarian cyst more than a solid tumour.

All large abdominal tumours flatten the umbilicus more or less. Ascites has the same effect. Flatulent distension, on the other hand, does not, as a rule, alter the umbilicus, while obesity increases its depth.
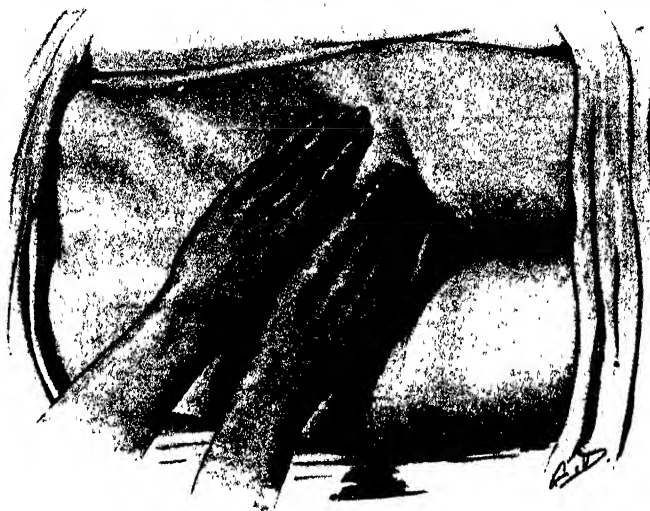
FIG. 13.—PALPATING THE LEFT ILIAC REGION.

FIG. 14.—PALPATION THROUGH THE UMBILICUS.

These points are worth bearing in mind in making a diagnosis of the cause of abdominal distension. It must not be forgotten that the umbilicus in some individuals is naturally protuberant.

Uterine tumours, and tumours originating in the ovary proper, usually lie in the middle line, especially when large.   On the other hand, swellings

FIG 15.—"DIPPING."
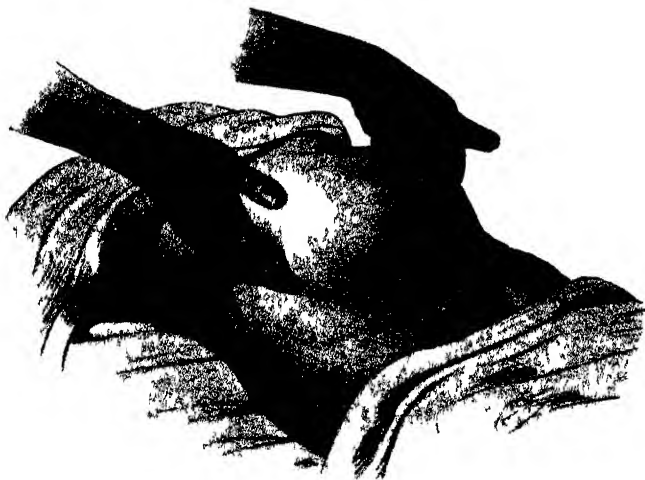
FIG. 16 —BIMANUAL ABDOMINAL PALPATION.

connected with the broad ligament, or kidney, and to a less extent the spleen, are usually markedly unilateral.

A tumour of the broad ligament occupies a lower position than one

of the kidney, and its lower border is ill defined (Fig. 6). With a renal tumour it is the upper border that is least marked.

Acute inflammatory swellings rising out of the pelvis may produce protuberance of the lower abdomen. Tubal and ovarian swellings lie

FIG 17.—EXAMINATION IN THE UPRIGHT POSTURE OF THE KIDNEY.

in tne middle line as a rule, but the tumour of broad-ligament cellulitis is markedly to one side.

With all inflammatory swellings there is more or less immobility of the abdominal wall in the region of the mass.

Palpation.—THE ROUTINE METHODS.—Palpation of the abdomen should be conducted in a routine manner in every case, not alone limiting this method of examination to that area of which complaint

is made, but investigating by its means all the accessible abdominal organs.

It is worthy of note that the power of tactile discrimination is considerably enhanced if the finger-tips are lubricated with soap and water.

It is usual for the examiner to stand on the right side of the patient. He should begin by palpating from the umbilicus downwards in the middle line, and should for this area use his left hand (Fig. 7). The radial side of the index finger should be specially employed, the tactile sense being most developed here.

Palpation should be gentle, and abrupt pressure should be avoided
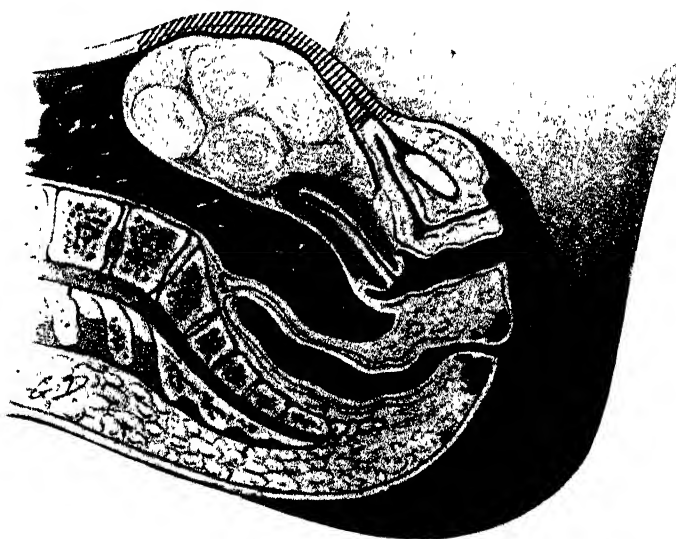
FIG. 18.—DRAWING TO ILLUSTRATE THE AREA OF DULNESS OVER A UTERINE TUMOUR.

lest it provoke contractile response of the abdominal muscle. Progression downwards should be made by a series of short steps, so to speak, until the symphysis is reached—any swelling rising out of the pelvis will then be detected. In patients with attenuated parietes the promontory of the sacrum, the aorta, and the uterine fundus, even when that organ is not enlarged, may be felt.

The right iliac region should next be investigated. Both hands are required to do this. Firm pressure can depress the abdominal wall into the fossa, and in thin patients the elevation of the iliacus and psoas muscles and the right brim of the pelvis can easily be felt (Fig. 8).

The cæcum normally presents as a soft indistinct swelling which is best appreciated by rolling it under the fingers.

FIG. 19.—DRAWING TO ILLUSTRATE WHY A RETRO-PERITONEAL TUMOUR IS RESONANT IN FRONT.
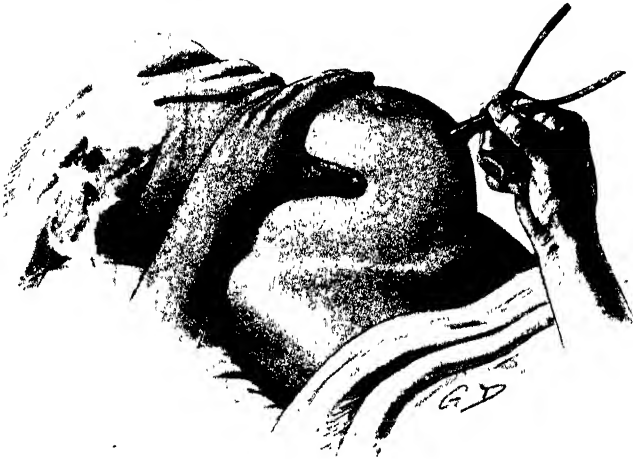
FIG. 20.—AUSCULTATION OVER A TUMOUR.

The right loin next should be examined. This is best carried out by Glenard's method. The left hand grasps the loin in such a manner that the fingers are applied to the back immediately under the twelfth

FIG. 21.—THE POSITION OF ELECTION FOR VAGINAL EXAMINATION.

FIG. 22.—EXAMINATION IN THE SUPINE POSITION.

rib, while the top of the thumb impinges on the outer edge of the ridge
formed by the psoas muscle and spine in front. The loin pouch is thus
encircled (Fig. 9). The patient should now be told gently to draw a

FIG 23 —TURNING THE PATIENT INTO THE KNEE-CHEST POSITION.

deep breath. This proceeding forces down the kidney, and its lower
pole can be felt to wedge itself in between the fingers behind and the
thumb in front. The latter is gently raised so as not to impede the

FIG. 24.—EXAMINATION IN THE KNEE-CHEST POSITION.

descent of the kidney. As the patient begins to expire, the thumb with
a slight sweeping movement upwards sharply compresses the loin, when
the kidney, if unduly mobile, is either caught between the fingers and
thumb or imprisoned below the thumb (Fig. 10). The right hand should

now be used to palpate the fixed organ.   This manœuvre, entitled by
Glenard " Palpation nephroleptique," is the best way of palpating the
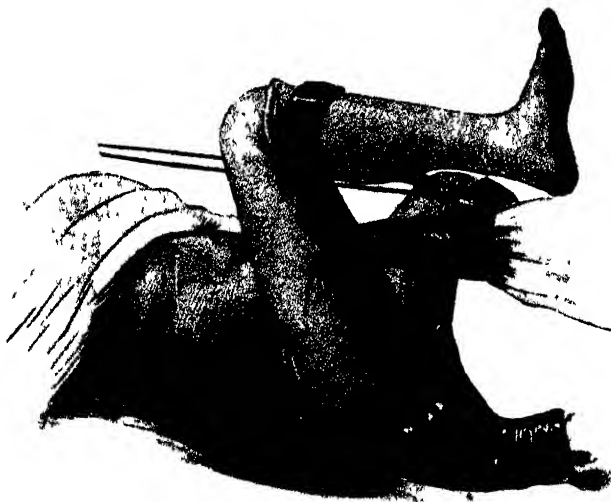
FIG. 25.—BIMANUAL EXAMINATION IN THE LITHOTOMY POSITION.
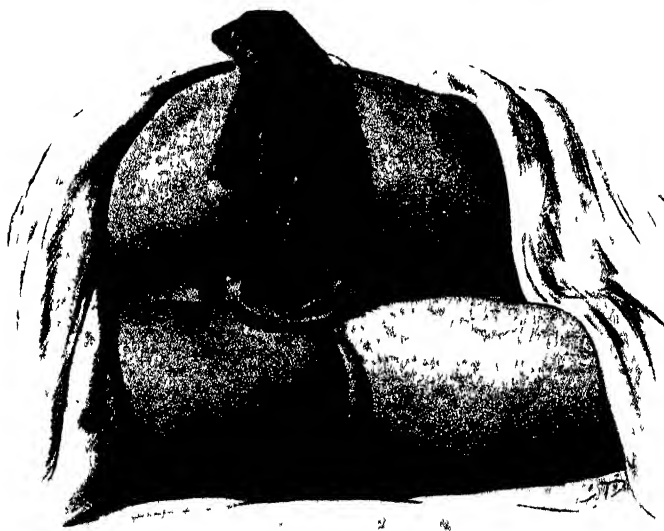
FIG. 26.—EXPOSING THE VULVA IN THE SIDE POSITION.

kidney in women, but the method is also excellent for palpating the
ascending colon and the right edge of the liver.

The supra-umbilical region should next be examined. The right hand is properly used for this in the same way as has previously been
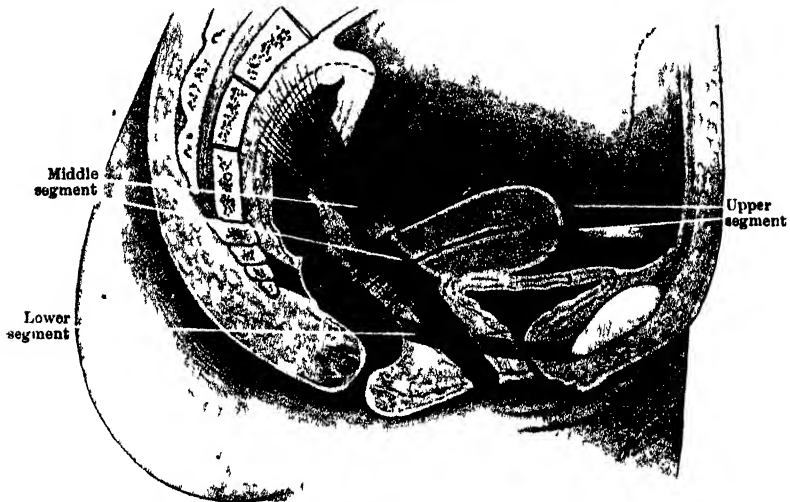
FIG 27 —THE ANTERO POSTERIOR RELATIONS OF THE GENITAL CANAL, SHOWING THE THREE SEGMENTS OF THE SUPPORTING APPARATUS   (See p 347)
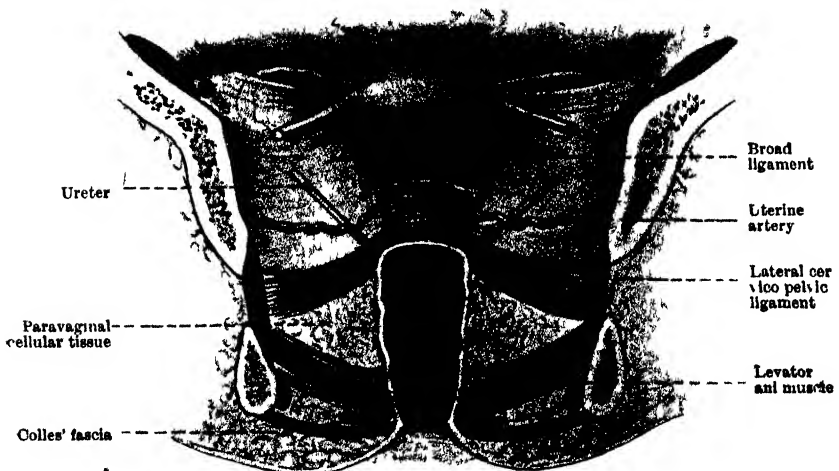
FIG 28 —RELATIONS OF THE GENITAL CANAL SEEN FROM THE FRONT.

described for the left hand in sub-umbilical palpation (Fig. 11).   The position of the edges of the liver and spleen, the region of the gall bladder, and the area of the stomach are thus investigated.

The edges of the liver and spleen should be felt for at the height of inspiration. The gall bladder when normal cannot be felt, but when enlarged may form a palpable tumour rendered more perceptible by simultaneously pressing the loin forwards by the left hand placed beneath it (Fig. 12).
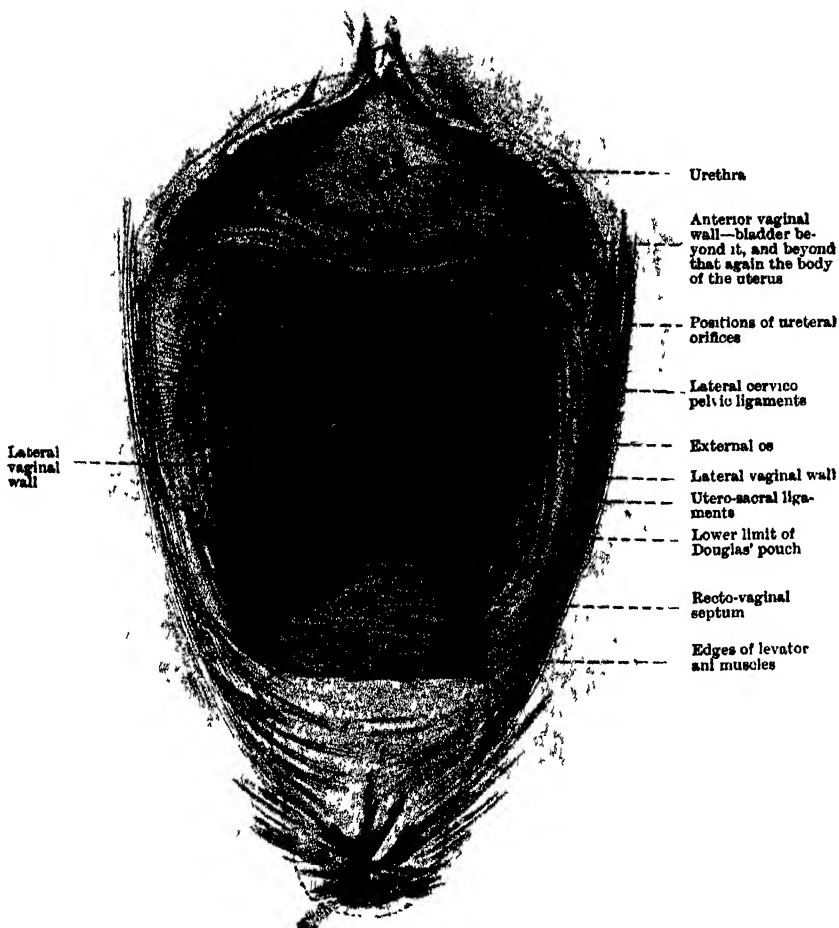
FIG. 29.—SCHEMATIC VIEW OF THE RELATIONS OF THE VAGINA.

It is necessary to remind the reader that the projection formed by the lumbar spine, the great vessels, pancreas, and meso-colon can be felt easily in all but very fat subjects, and in thin persons may be so palpable as to lead to a mistaken diagnosis of abdominal aneurysm or pancreatic tumour.

The stomach when normal cannot be palpated.

The left loin should next be examined by the same method as that already described for the right, except that on this side the right hand should be used to grasp it.

It may be remarked that the left kidney is normally higher than the right, and whereas the lower pole of the latter can be felt in 91 per cent. of women patients, that of the former can only be felt in 59 per cent.

Further, the descending colon, by reason of its smaller calibre, its comparative freedom from flatulent distension, and its more posterior position, is not usually felt as easily as the ascending colon.

The left iliac region is now examined with both hands in the same manner as the right iliac region. The sigmoid colon is palpable in most persons. It presents as a cord-like ridge about the thickness of two fingers. It is harder and narrower than the cæcum, and is felt by rolling it under the fingers (Fig. 13).

Lastly, the position of the transverse colon should be made out if possible. The position of this segment of the gut is variable. It may lie above the umbilicus, but in persons with flaccid tissues it may loop downwards almost to the pelvic brim. It is best felt by rolling it under the fingers in the manner described for the cæcum and sigmoid colon.
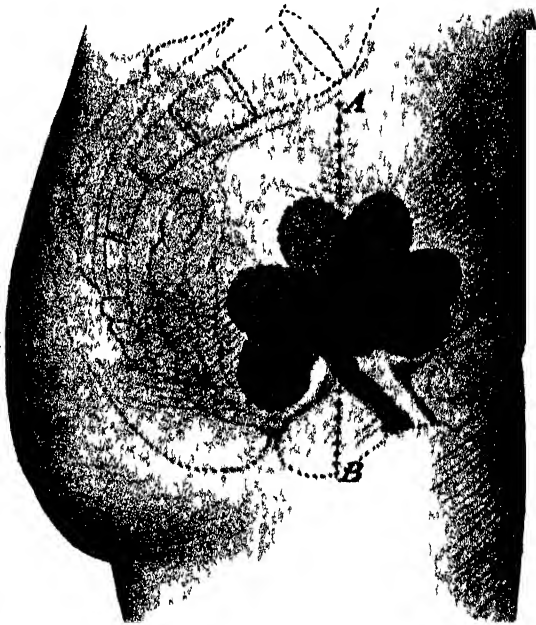
FIG. 30.—POSITIONS OF THE UTERUS— NORMAL AND ABNORMAL.

PALPATION THROUGH THE UMBILICUS.—When examining very stout patients it is useful to remember that by palpating through the umbilicus the finger is able to approach the underlying viscera unembarrassed by fat in front of it (Fig. 14).

PALPATION BY "DIPPING."—When the solid abdominal viscera are obscured by free fluid in the peritoneal cavity the manœuvre of "dipping" may reveal them. "Dipping" consists of a short, sharp, stabbing movement, which by suddenly displacing the fluid allows the finger to moment-

arily impinge on the organ beneath. It is usefully applied to feel the liver in ascites, and by its means the solid masses of intra-peritoneal malignant disease may be detected through the free fluid that surrounds them. It is, further, a good manœuvre for detecting fœtal parts when the pregnant uterus contains an excess of liquor amnii (Fig. 15).

THE FLUID THRILL.—This phenomenon indicates a collection of fluid in the abdominal cavity either free or encysted. It is only obtainable when the fluid is in continuity between the two hands. It is best felt in unilocular ovarian cysts and cases of marked ascites, but it is absent in multilocular ovarian cysts and in the slighter degrees of ascites or when the ascitic fluid is loculated. Lastly, it cannot be detected if the fluid is viscid.

BIMANUAL ABDOMINAL PALPATION.—Difficulty sometimes arises in
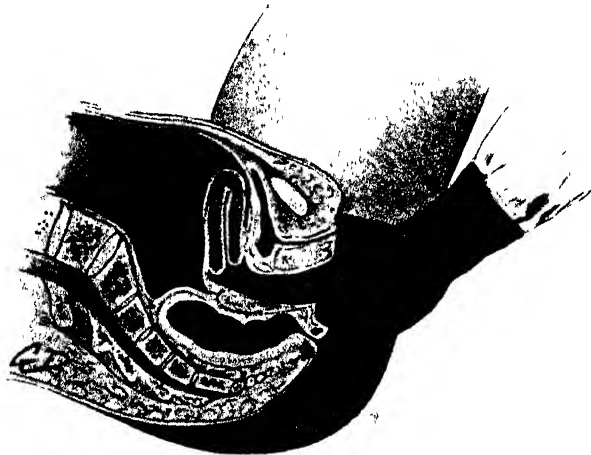
FIG. 31.—"WEIGHING" THE UTERUS.

determining whether an abdominal enlargement is due simply to adipose deposit, ascitic fluid, or to an abdominal tumour. In such cases bimanual abdominal palpation is useful. A hand is placed on either side of the abdomen and the suspected tumour is sought for by a " dipping " movement of both hands simultaneously. If a tumour is present it will be caught between the two hands (Fig. 16).

ABDOMINAL EXAMINATION IN THE STANDING POSTURE.

When investigating for any defect due to gravity, such as ptosis of the kidney or other abdominal visceroptosis, or for hernia, examination in the

standing posture is most necessary. Especially is it so in the case of undue renal mobility, for some " movable " kidneys do not exhibit their normal excursion in the lying posture, while conversely, others that descend low with inspiration, when the abdominal parietes are relaxed by recumbency, are not found to exhibit abnormal mobility when examined in the standing posture with the abdominal muscles braced up.

Glenard's method of palpation is specially applicable to the standing posture. The patient should be told to relax her muscles as if she was very tired, and the trunk should be slightly lateri-flexed at the waist towards the side on which the kidney is being examined (Fig. 17).
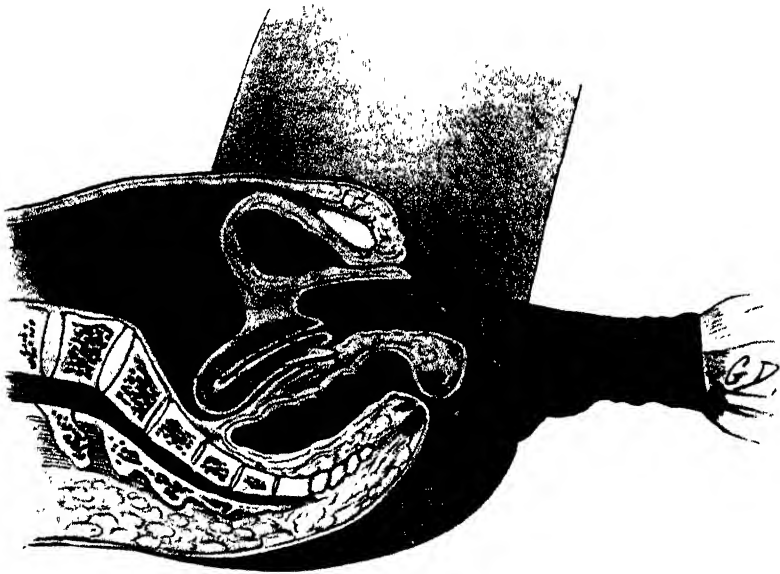
FIG. 32.—" ROCKING " THE UTERUS.

Opportunity should be taken to palpate the inguinal and femoral rings while the patient is standing up.

Percussion.—Normally the areas of the abdomen that yield the most resonant note on percussion are those under which the stomach and cæcum lie. The right flank is more resonant than the left flank, because more flatus is contained in the ascending than in the descending colon.

The transverse colon may give a very resonant note if distended with gas, but it often appears to be empty. The sigmoid colon, as a rule, is the least resonant segment of the bowel.

Enlargements of the uterus (including pregnancy) and ovarian tumours

are, as a rule, dull on percussion, because as they ascend into the abdomen they lie in close contact with the abdominal wall (Fig. 18). Myomata originating in the supra-vaginal cervix, however, often give a resonant note, because they underburrow the peritoneal floor of the pelvis and lift the intestines on the top of them.

FIG 33 —POSITION OF OVARY WITH THE UTERUS ANTEVERTED

The inflammatory masses, notably those formed as the result of salpingitis, are often resonant or partially so, because the tumour felt per abdomen is a conglomerate consisting, besides the distended tube, of adherent omentum and intestine, the latter of which gives a resonant note on percussion. The mass formed by appendicitis has the same characteristics.

Broad ligament tumours of any size, on the other hand,

FIG. 34 —POSITION OF OVARY WITH THE UTERUS ANTEFLEXED.

are nearly always dull, because they reach the abdominal wall without intestine intervening.

Occasionally cysts or solid tumours of the retro-peritoneal tissues are

met with. Such masses are always more or less covered by intestine, and hence exhibit various degrees of resonance (Fig. 19).

Swellings connected with the kidney are dull on their outer surface, but the colon resonance can be elicited on their inner side and in front. Pancreatic tumours, like other swellings arising in the retro-peritoneal tissue, are partially or entirely resonant.

Auscultation. —Auscultation is chiefly of service as a means of diagnosing pregnancy.

FIG 35 —POSITION OF OVARY WITH THE UTERUS RETROVERTED

In this connection it may be recalled that the fœtal heart is rarely heard before the twenty-fourth week, though on occasions it may be heard as early as the eighteenth. It is important to steady the uterus with the hand in order to prevent the pressure of the stethoscope pushing away the body of the child when listening for the fœtal heart (Fig. 20). To hear the funic souffle is a chance event of much rarity.

FIG. 36.—POSITION OF OVARY WITH THE UTERUS RETROFLEXED.

The uterine souffle is best heard over the uterine leash of vessels

as they run up the side of the uterus. Since this organ is usually some-what twisted to the right in pregnancy, it follows that, as a rule, the souffle is heard best or only heard on the left side.

A uterine souffle is also sometimes heard when the organ is enlarged by tumour formation, such as a myoma or sarcoma. Its presence in such conditions argues a high degree of vascularity. The finding of a souffle would decide the diagnosis be-tween a uterine tumour and one growing from the ovary.

FIG. 37.—PRESSURE TRANSMISSION THROUGH AN ENLARGED UTERUS.

VAGINAL EXAMINATION.

When making a vaginal examination the practitioner should always wear either a rubber finger-stall or a rubber glove.

The use of such a precaution is alone justified on the score of common cleanliness, but apart from this it protects the ex-aminer, not only from the chance of septic or venereal infection of his finger, but also from con-tamination of his skin and nail with pathogenic organisms which once implanted may be difficult to get rid of. This latter aspect of the advantage of habitually using a protective covering to the finger, applies with special force to those who are engaged in the practice of surgery.

It is further to be remem-bered that the public nowadays have a considerable knowledge of the importance of surgical cleanliness, and are quick to appreciate the adoption by the doctor of every means to that end. Hence the prac-titioner whose methods are slovenly and dirty runs the risk of unfavour-able comparison if his patient chances to come in professional contact with another medical man who works on the modern standard.

Vaginal examination is an art in which expertness is chiefly acquired

by continual practice, for while it is possible by instruction to convey the main principles of the method and the general results yielded by it, yet, to a large extent, the tactile conceptions of each individual are peculiar to himself and, as such, require to be self-evolved.

It is a common fallacy among students to consider a case but little worth examining unless it presents physical signs of disease. This is a great mistake. The difference between the expert and the tyro lies not so much in the former's superior ability to detect abnormality as in his much greater knowledge of the wide range of normality. In a large number of gynæcological cases the physical signs of disease are so gross as to be obvious more or less to any one, be he a beginner or a past master. The skill to be striven for, however, is that which enables the examiner rightly and with confidence to state that there is nothing amiss with the pelvic organs, and this can only be attained by constant practice.

Position.—Various positions may be chosen for vaginal examination, namely, the semi-supine position, the supine position, the side position, the semi-prone position, the knee-chest, the knee-elbow positions, the lithotomy position, and the upright position. Each has its advantages in certain circumstances.

Fig. 38.—Pressure Transmission through a Uterine Tumour growing into the Broad Ligament.

The position we prefer for the consulting-room is the semi-supine. The patient should lie with the transverse axis of her pelvis oblique to the plane of the couch and with her shoulders very nearly horizontal, so that her trunk is twisted somewhat at the waist (Fig. 21).

In this position the examiner is able to apply his weight when making

a bimanual examination, instead of having to rely only on muscular effort as in the side or semi-prone positions.

Further, starting from this position he can roll the patient forwards into the side and semi-prone position successively, or back into the supine position, thus bringing each of the quadrants of the pelvis within the range of greatest accessibility (Fig. 22). Should it be necessary to place the patient in the knee-chest position, this is effected by placing the left hand under the waist and lifting her hips, telling her in the meantime to keep her shoulders on the couch (Figs. 23 and 24).

In the case of a patient in bed and too ill to be turned on her side, examination is best conducted with the legs drawn up and the knees separated, the examiner's hand approaching the vulva either from above or from under the right thigh.

The standing posture is useful when investigating displacements of the genital canal due to gravity.

The extent of the displacement, it is true, may be gauged in the lying posture by telling the patient to strain down, but the full effect of gravity can only be estimated when she is standing.

FIG. 39 —PRESSURE TRANSMISSION THROUGH A TUMOUR TO ONE SIDE OF THE UTERUS AND DETACHED FROM IT.

The patient should stand with the feet apart and the body in a slightly stooping position. The examiner should sit before her with his left hand on her right shoulder to steady her and his right elbow supported on his right knee, in which position the upward pressure of his finger can be assisted by raising his right heel.

This method of examination is extremely useful, and permits of a very efficient exploration of the pelvis.

The lithotomy position should be reserved for examinations under an anæsthetic or for work in out-patient departments in which a large number of patients have to be examined in a relatively short time. It permits of instant inspection of the external genitals and the ready introduction of a speculum, but involves more exposure of the patient (Fig. 25).

The distance to which the examiner's fingers can be made to reach
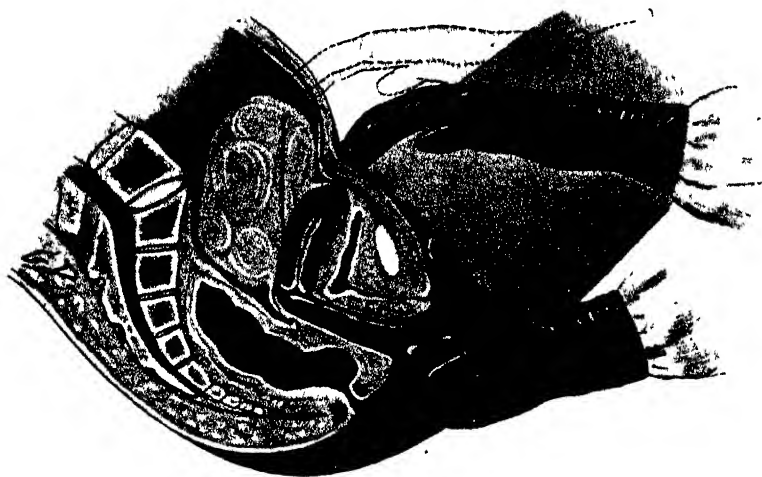
FIG 40.—PRESSURE TRANSMISSION THROUGH A TUMOUR OF THE POSTERIOR UTERINE WALL.

in this position is increased by buttressing the elbow on the hip of the same side.

The Routine Method.—In making a vaginal examination one finger should as a rule be used—two give pain and are for ordinary purposes no more efficient. It might be thought that a greater reach is attained by using the middle as well as the index finger, but the distance to which the finger-tip can be made to reach depends more upon the extent to which the remaining fingers can be flexed, and with most persons it will be found that this is at its maximum when the index finger alone is extended.

One not infrequently hears the complaint, " My fingers are so short," but as a matter of fact the length of the index finger is very nearly the same in all men, measuring 4 inches from the tip to the crest of the knuckle.

Soap is the best lubricant to use, because it washes off readily.

When it is necessary to examine a virgin it should be remembered that the sharp edge of the hymen is the part of highest sensibility, and pressure on it should be avoided by keeping the finger pressed forwards into the sub-pubic angle. This is effected most easily when the patient is examined in the dorsal posture with the hand introduced from above.

All vaginal examinations should commence with an inspection of the vulva. In the side postures this is best obtained by raising the right labium majus with the fingers of the left hand (Fig. 26).

In making a vaginal examination gentleness of touch is important. To hurt the patient is to defeat the end, for resistive movements and the involuntary hardening of the abdominal muscles will probably render the whole proceeding nugatory.

ANATOMY OF THE VAGINA.—It is most important for the examiner mentally to visualize the natural relations of the parts adjacent to the genital canal. It will not be out of place here then briefly to remind the reader of the normal anatomy of the relations of the vagina (Figs. 27 and 28).
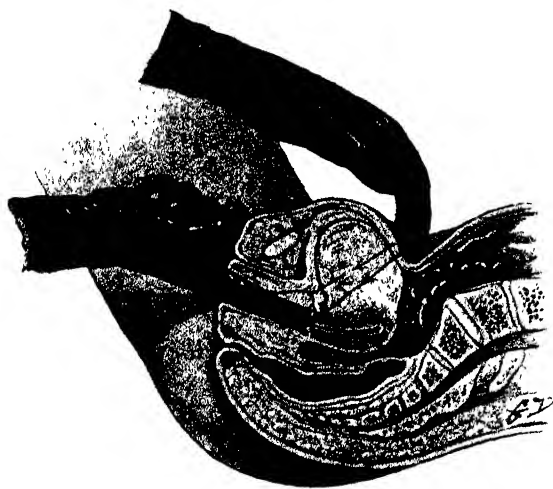
FIG. 41.—PRESSURE TRANSMISSION THROUGH A TUMOUR OF THE ANTERIOR UTERINE WALL.

The vagina is approached from the vulva by a short funnel-shaped depression bounded behind by the fourchette, in front by the urinary meatus, and laterally by the lower end of the inner surfaces of the labia.

This introitus perforates the fascia of Colles, and the glands of Bartholin are in relation with it laterally.

At the bottom of the introitus is the hymen. This membranous fringe varies in shape and consistence in different individuals.

It is most commonly either crescentic or iris-shaped. Sometimes two or more apertures are present. Before puberty it tends to be smooth and membranous. In young adult virgins it becomes softer and often presents a number of petal-like folds.

As old age is attained the membranous condition of childhood is reverted to.

In parous women the hymen remains more or less as the carunculæ myrtiformes.

The vagina in the upper two-thirds of its extent lies above the pelvic floor which it perforates 1 inch above its orifice.

The anterior wall is about $2\frac{3}{4}$ inches long. The lower inch lies in relation to the urethra ; the middle $1\frac{1}{2}$ inch lies in relation to the base of the bladder ; the upper $\frac{1}{4}$ inch to the cellular tissue between the bladder and the supra-vaginal cervix. From these it is separated by a well-defined cleavage plane.

The posterior wall is about 4 inches long. The lower inch is in relation to the perineal body, the middle 2 inches to the anterior wall
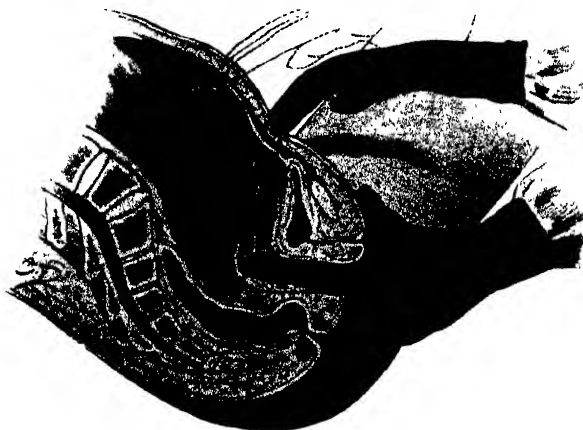
Fig. 42.—Pressure Transmission through a Tumour lying behind the Uterus and detached from it.

of the rectum, and the upper inch to the peritoneum lining the utero-rectal pouch or pouch of Douglas.

The vaginal wall is closely adherent to the perineal body, but above this it is easily separated from the rectal wall and the peritoneum along a well-defined cleavage plane.

The lateral vaginal wall on either side is at first in relation to the cellular tissue space immediately superficial to the levator ani muscles. In this space lie Bartholin's glands, the lower end of the vestibular bulb, and the ischio-cavernous muscle (superficial sphincter of the vagina). Immediately above this space, and less than an inch from its orifice, the canal passes between the edges of the levator ani muscles, which can be felt as a firm ridge on either side.

The entire extent of the lateral wall above this is in relation with the

cellular tissue underlying the pelvic peritoneum. This cellular tissue is continuous above with that contained between the layers of the broad ligament proper. In its lower part it consists chiefly of fat resting upon the fascia covering the upper surface of the levator ani muscles (recto-vesical fascia), but above this a strong fan-shaped mass of fibre proceeds on either side from an attachment to the lateral vaginal vault and supra-vaginal cervix to become inserted on the lateral pelvic wall. These fibrous masses, known as the lateral cervico-pelvic ligaments, form the principal support of the vaginal vault, and over their upper edges run the ureters as they slope forwards to terminate in the bladder.

The vaginal vault or dome, for purposes of description, is best divided

FIG. 43 —PRESSURE TRANSMISSION THROUGH A TUMOUR LYING IN FRONT OF AND DETACHED FROM THE UTERUS.

into anterior, posterior, and lateral portions (Fig. 29). The anterior part of the vault is in the middle line in relation with the cellular interval between the bladder and supra-vaginal cervix. Farther out, i.e. where it joins the lateral parts of the vault, it approaches close to the terminal portion of the ureters.

The lateral part of the vault on either side is immediately in contact with the cervico-pelvic ligament, and above this with the ureters and uterine artery, the former lying lowermost.

The posterior part of the vault in the middle line is immediately in relation with the peritoneum, but farther out (i.e. where it joins the lateral portion of the vault) it is in relation with the utero-sacral ligament of either side as these bands pass backwards.

The utero-rectal pouch in young persons is usually empty, but in persons the subject of visceroptosis, or obesity, coils of small intestine, a loop of the pelvic colon, or the lower part of the omentum may occupy it.

The vaginal cervix normally projects backwards so that the external os looks towards the posterior vaginal wall. Its shape varies to some

extent in different women. In the virgin it is more or less conical and the external os is usually circular, but may be transversely slit-shaped.

In normal parous women the vaginal cervix is larger and less conical in shape than in the virgin. The external os is usually represented by a transverse slit, though sometimes the circular shape of virginity is main-tained. Its size depends chiefly on whether the cervix has been split during labour. Such lacer-ations may be either unilateral, bilateral, or multiple.

A laceration of the cervix probably never unites spontane-ously, but under healthy con-ditions heals by granulation, the raw surfaces eventually becom-ing covered with squamous epithelium resembling that of the rest of its vaginal surface. Hence a labiate condition of the cervix, so long as the inner surface of the lips is not the seat of an erosion (see p. 245), is not to be considered patho-logical, and in fact does not give rise to any symptoms (see p. 254).

Not infrequently the exter-nal os, though round in shape, is abnormally patulous. Here again, so long as its surfaces are healthy, the condition has no pathological significance *qua* the cervix.

The uterus normally lies in anteversion, but its exact posi-tion is very variable in different women. For practical purposes

FIG. 44.—TO ILLUSTRATE HOW PRESSURE TRANS-MISSION ALLOWS OF THE DETECTION OF A UTERINE ENLARGEMENT TOO SOFT TO BE FELT BY EITHER HAND.

it may be taken that the position is normal if, with the patient *in the standing posture*, the axis of the organ is in front of the axis of the middle line of the body (Fig. 30).

A greater or lesser degree of anteflexion is usually present as well, and hence the extent to which the body of the uterus can be felt through

the anterior vaginal vault differs. Most commonly the organ lies so
that its axis points towards a spot at the junction of the middle and
lower thirds of the
distance between the
umbilicus and pubes.
In this case only the
lower part of it can
be felt from the an-
terior fornix.

When, however,
the uterus is more
anteflexed than this,
its whole length can
be felt through the
anterior vaginal
wall.

The size of the
uterus is also vari-
able within normal
limits. It is larger
as a rule in parous
women than in vir-
gins. Marked ante-
flexion invariably
creates the impres-
sion that the organ
is smaller than it
really is, because its
full length is not so
readily appreciated
as when the organ is
straight.

**"Weighing"
and "Rocking"
the Uterus.**—When
by reason of its ab-
normal position or
because of obesity
or rigidity of the
abdominal wall the
position and size of

Fig. 45.—Diagram showing how Pressure Transmission
allows the detection of a Tumour to the side of
the Uterus too soft to be felt by either hand.

the uterus is difficult to determine, the devices of " weighing " and
" rocking " may be employed.

"Weighing" is effected by raising the organ with the pressure of the finger-tip on the cervix and endeavouring to estimate its size by the sense of weight imparted (Fig. 31). When carrying out this manœuvre regard must be paid to the degree to which the ligamentary supports of the organ resist its being lifted, otherwise a false impression will be created.

"Rocking" is performed by swinging the organ either sideways or backwards by pressure sharply applied to the cervix. Here again regard must be paid to the resistance due to the ligaments and consistence of the uterine tissue (Fig. 32). Both these methods require practice to make them of value. Normally the uterus is an insensitive organ, and pressure applied to it should elicit discomfort but not pain.

Palpating the Uterine Appendages.—The ovaries also vary in position within normal limits. With the uterus in full anteversion (Fig. 33) and anteflexion (Fig. 34) they should be felt through the anterior halves of the lateral vaults, but with the organ in its more normal situation (*vide supra*) they are detected through the posterior halves of the lateral vaults. When occupying either of these positions they can be felt bimanually. When, however, the uterus is retroverted (Fig. 35) or retroflexed (Fig. 36) they are carried backwards towards the pouch of Douglas and cannot then be felt bimanually.

Normal ovaries are difficult objects to feel. The reason for this, which it is important to appreciate, is their extreme mobility, which enables them to move away from the pressure of the examining finger. Hence it follows that they are easiest felt when gently touched, forcible effort defeating the end. When, however, there is a background to feel them against they are readily appreciable. In bimanual examination such a background is artificially obtained by the pressure of the abdominal hand. When lying too low in the pelvis for this method the ovaries are best felt by pressing them against the pelvic wall.

When an ovary lies underneath a retroverted uterus it is also easily felt, because the uterus forms a background against which to palpate it.

Ovaries tethered by adhesions are easily palpable for the same reason, namely, that they cannot be pushed away in front of the examining finger.

The normal uterine tubes and round ligaments can often be felt by bimanual examination when the uterus is in anteversion. When it is retroverted their detection is more difficult and is often impossible.

It is, however, to be remarked in connection with the palpation of the uterine appendages that the fact that they cannot be felt by an examiner versed in vaginal examinations indicates that they are in all probability normal.

3

BIMANUAL EXAMINATION.

There are two factors in the rationale of this method of examination—

1. The creation of a background against which the part examined can be pressed and so rendered more distinct.
2. The phenomenon of " pressure-transmission."

CREATION OF A BACKGROUND.—The creation of a " background " has already been referred to in connection with palpation of the ovaries ; its essence lies in the fact that the pelvic organs are movable, and when palpated either from the abdominal surface or vaginal surface alone, simply tend to be pushed away in front of the examining hand or finger and rendered indistinct.

In bimanual examination, on the other hand, the part under examination is fixed by pressure applied in opposite directions, so that it is unable to elude the hand or finger seeking for it.

Thus in ordinary circumstances it is impossible to feel a normal-sized uterus from the abdomen, for, although the fundus of the organ reaches considerably above the level of the pubes, the pressure of the examining hand pushes it away with several coils of intestine intervening. If, however, this elusive movement is prevented by making counter-pressure on the cervix or by actually elevating the whole organ by that means, then the contour of the upper part of the corpus becomes at once apparent in the majority of cases.   Conversely, pressure on the abdomen, by preventing the uterus being pushed upwards, renders its lower pole more palpable to the finger in the vagina.

The same reasoning applies to the ovaries and uterine tubes, or any other mass or part lying in the pelvis which it is desired to examine.

PRESSURE-TRANSMISSION.—The phenomenon of pressure-transmission is due to the fact that whenever a homogeneous body is compressed between the two hands a sense of conveyed pressure is transmitted from one to the other.

When examining any pelvic mass which reaches near the abdominal wall an area will be found, pressure over which is immediately transmitted to the finger in the vagina if it be placed on the lower pole of the swelling.

The relative sizes and position of this area, and the position in the vaginal vault through which the pressure is transmitted, vary according to the nature of the mass.

Thus with the uterus lying in anteversion, the area is limited to that portion of the abdominal wall under which the body of the uterus is situated, and the transmission occurs through the vaginal cervix (Fig. 37). If, therefore, the top of the index finger of the right hand be placed firmly against the cervix while the left hand palpates the abdomen, a

sense of transmitted pressure will be felt when the abdominal hand presses over the area which corresponds to the body of the uterus and over nowhere else.

If, however, the uterus be anteflexed as well as anteverted, pressure can be transmitted not only through the cervix but also to the finger placed against the anterior vaginal vault.

In the case of a tumour of the uterus encroaching on the broad ligament, pressure-transmission will occur both through the cervix and the lateral vaginal vault of that side, while the abdominal area of pressure-transmission will be large and asymmetrical (Fig. 38).

In the case of a tumour lying to one side of the uterus and detached from it, pressure-transmission will only occur between the area of the abdominal wall corresponding to the position of the tumour and the lateral vaginal vault on that side (Fig. 39). If a tumour of the posterior uterine wall is large enough to reach the abdominal wall, pressure-transmission can be elicited both through the cervix and posterior vaginal vault (Fig. 40); while with one of the anterior wall it can be elicited both through the cervix and anterior vaginal vault (Fig. 41).

With simple retroversion or retroflexion, pressure-transmission through the uterus cannot be elicited because the hand on the abdomen cannot reach the body of the uterus except in very thin persons.

Pressure-transmission is extremely useful in deciding the relation borne to the uterus by any mass felt from the abdomen, for in general it may be taken that whenever pressure-transmi sion occurs through the cervix the mass felt is either uterine or so closely bound up with the uterus as to be inseparable from it.

In the case, however, of a tumour separate from the uterus whose lower pole is lying in the pouch of Douglas, there will be two distinct areas of pressure-transmission, a large one corresponding to the tumour as felt per abdomen, from which pressure is transmitted to the posterior vaginal vault, and a small one corresponding to the position of the uterine body, through which pressure is transmitted to the cervix (Fig. 42). This smaller area will be situated low down in the abdomen in the middle line if the uterus is in its normal position, or to one side of it if the uterus is lateroverted, as it often is in these cases.

If the tumour be situated in front of the uterus, pressure transmission occurs through the anterior vaginal vault, but not through the cervix (Fig. 43). In such a case the uterus is usually retroverted, and hence no second area of transmitted pressure is present. Occasionally, however, the uterus is lateroverted, in which event a small area lying to one side of the mass will be found, pressure on which is immediately transmitted through the cervix.

Pressure-transmission further allows us to diagnose the presence of a mass or tumour too soft and indistinct to be felt by either hand singly employed.

Thus in some cases of pregnancy, more especially in obese patients, the enlarged uterus is so soft and lax that, although rising even above the umbilicus, it cannot be appreciated by palpation (Fig. 44).

In such a case, however, bimanual examination reveals an area on the abdominal wall of extent commensurate with the body of the uterus, pressure over which is immediately transmitted to the finger placed on the vaginal cervix and anterior vaginal vault.

Similarly, thin-walled lax cysts of the ovary or flaccid fluid distensions of the uterine tubes may be undetectable except by the finding of an area on the abdomen through which pressure-transmission to the lateral or posterior vaginal vault is obtained (Fig. 45).

It is noteworthy that pressure-transmission does not occur with gaseous distension of the intestines, nor with fluid in the peritoneum so long as it is free ; when the fluid is loculated, however, and especially when it is under tension, pressure - transmission is obtainable.

In performing a bimanual examination the finger in the vagina should be kept fixed on some selected point, and palpation be made on to it by the hand on the abdomen.

It is usual in all cases to begin by placing the finger on the vaginal cervix and by its means lifting up the whole uterus, so as to determine at the outset its position and size. After this is accomplished, the quadrants of the vaginal vault should be examined in order to ascertain the presence or otherwise of any abnormal mass.

THE SPECULUM.

The more versed the practitioner becomes in digital vaginal examination the less often will he need to resort to the use of the speculum. To those sufficiently experienced nearly all the diseased conditions of the cervix and vagina can be detected by touch alone.

For the less expert the speculum is an important adjunct to the finger.

The tubular pattern of Fergusson is that most commonly employed (Fig. 46). Its drawback is that when the cervix is bi-lipped the instrument tends to press the lips together, and may thus conceal an erosion, or even an early carcinomatous growth, situated on the inner surfaces of the lips.

Sims' duckbill speculum gives a wider view of the cervix and vaginal vault than the last named. For its use the patient should lie in the semi-prone position and the upper buttock should be raised (Fig. 47).
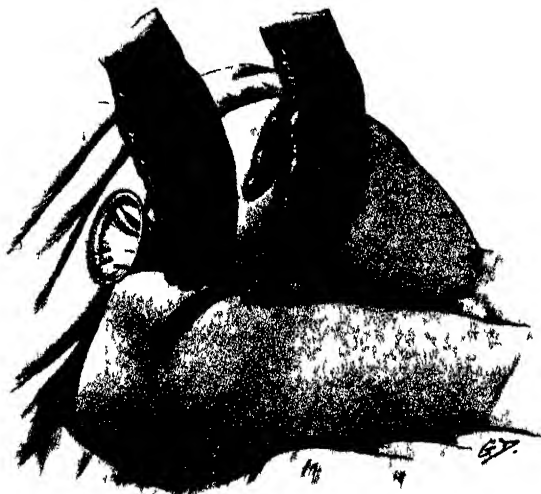
FIG 46 – INTRODUCTION OF FERGUSSON'S SPECULUM
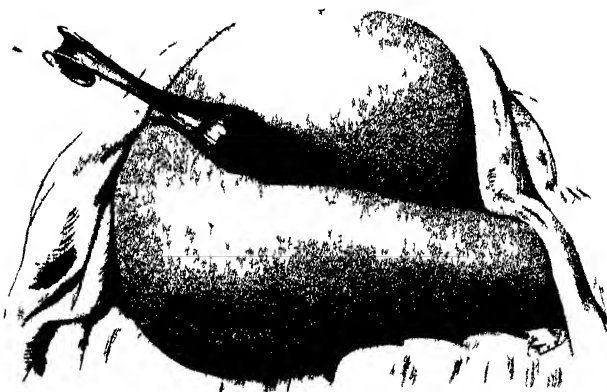
FIG 47 – SIMS' SPECULUM IN POSITION.

The hinged bi-valve speculum also gives a very good view of the upper vagina, and is moreover easy to introduce. It is particularly useful when making applications to the cervix.

THE UTERINE SOUND.

The uterine sound, as a diagnostic agent, is an instrument much less used than formerly. By its means the length and direction of the uterine cavity may be ascertained and the presence of intra-uterine tumours may be sometimes detected. Any marked enlargement of the uterus can, however, as a rule, be made out by bimanual examination, whilst the position in which the organ is lying ought to be apparent in all straight-forward cases by the same means.
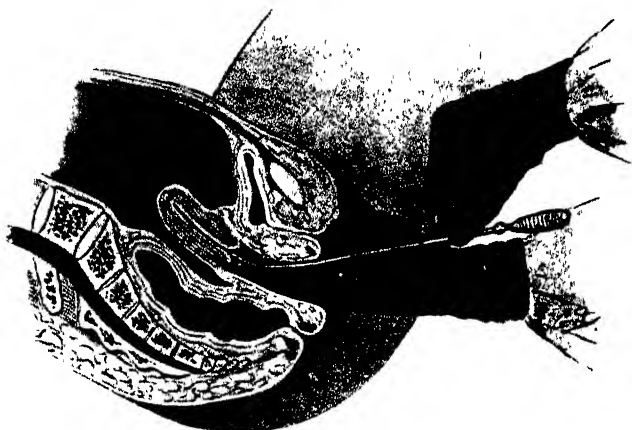
FIG. 48.—DIRECT METHOD OF PASSING THE SOUND WITH THE UTERUS IN ANTEVERSION

The sound is a dangerous instrument, and he who uses it indiscriminately runs the risks of—

(a) passing it into a pregnant uterus by mistake ;
(b) infecting the uterus ;
(c) perforating the uterus.

These disasters have befallen even the most expert.

The practitioner will do well, therefore, to limit its use, as a means of diagnosis, to such cases as, by reason of their obscurity, require examination under an anæsthetic. The use of the sound as a method of rectifying a retroverted uterus is dealt with on page 358.

With the uterus in anteversion there are two methods of passing the sound. In the first the instrument is held in the right hand with its concavity forwards, and the left index finger being placed on the cervix as a guide to the os, it is passed directly through and up to the fundus of the uterus (Fig. 48). In the second method the index finger of the

right hand indicates the os, and the sound held in the left hand with its concavity backwards is passed along the finger till its point impinges in
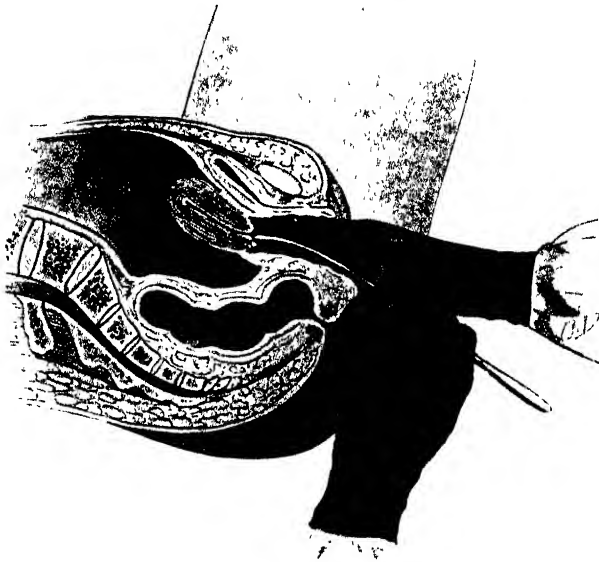
FIG. 49.—PASSING THE SOUND BY THE TOUR DE MAÎTRE   FIRST STEP.
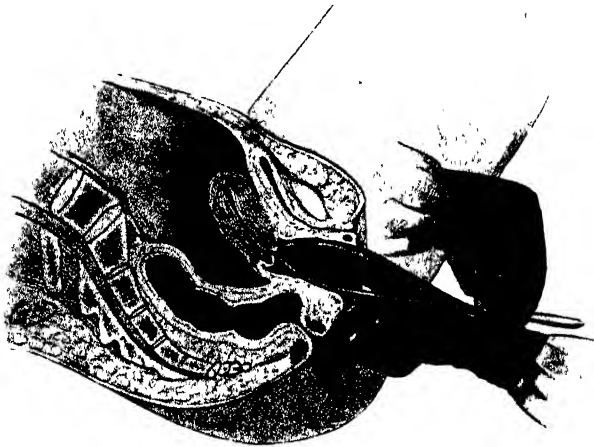
FIG. 50.—PASSING THE SOUND BY THE TOUR DE MAÎTRE.   SECOND STEP.

the external os (Fig. 49).   Pivoting the point in the os, the instrument is now turned through half a circle and is then passed onwards into the uterus (Fig. 50).

RECTAL EXAMINATION.

Rectal examination is employed—
> (a) when the symptoms suggest something amiss with the bowel ;
> (b) in lieu of a vaginal examination when investigation by this route is impossible or inadvisable, as in many virgins ; and
> (c) as an adjunct to vaginal examination when the results of the latter do not suffice to make clear the nature of the case.

It is an excellent method of palpating the uterus and its appendages, and by its means the relation borne by a pelvic tumour to the rectum is at once revealed (Fig. 51). As a means of palpating the parametric tissue it is superior to vaginal examination, and thickening in this situation
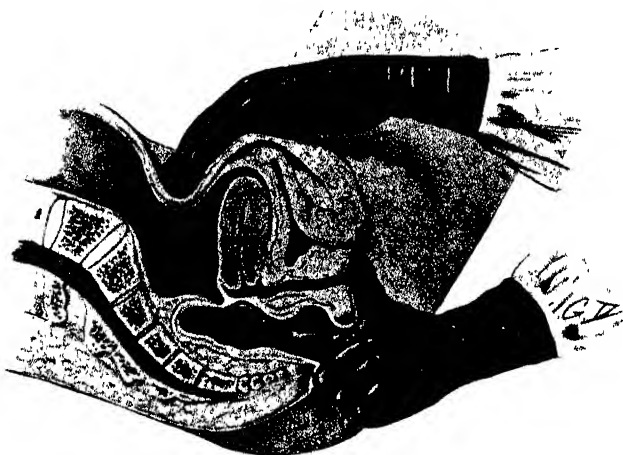
FIG. 51.—BIMANUAL RECTAL EXAMINATION.

may be only detectable in this way. Thus in cases of carcinoma of the cervix a rectal examination should always be made.

The practitioner should beware of falling into a very common error, namely, that of mistaking the projection of the cervix as felt through the rectal wall for a tumour lying behind the uterus.

In obscure cases presenting symptoms referable to the bowel and in which digital examination of the rectum reveals nothing, the sigmoidoscope is usefully employed. By this instrument lesions beyond the reach of the finger, high up in the rectum or in the pelvic colon, may be seen. Experience is required for its effective use, and in inexpert hands it may even become dangerous, cases having occurred in which the wall of the bowel has been ruptured or perforated.

EXAMINATION OF THE BLADDER.

The bladder and terminal portion of the ureters can be well palpated through the vaginal wall, and vesical new growths and calculi can be felt in this manner. If further information as to the condition of this viscus is required, the cystoscope should be employed. By its means the interior of the bladder can be seen, the ureteral orifices inspected, and the ureters themselves, if need be, catheterized.

Cystoscopy is an art requiring experience to render its results reliable, and its use is properly left to the expert.

It may be carried out without an anæsthetic in many cases, especially if there is no intention to catheterize the ureters. When, however, the patient is nervous, and particularly when ureteral catheterization is in contemplation and some difficulty in performing it is anticipated, anæsthesia is most certainly desirable.

PART II.

THE SIGNIFICANCE OF SYMPTOMS.

AMENORRHŒA.

PATIENTS suffering from amenorrhœa can be divided into two groups—
1. Those in whom the pelvic organs appear to be normal.
2. Those who present physical signs indicating some change or abnormality of the genital organs.

AMENORRHŒA WITHOUT LOCAL PHYSICAL SIGNS.

Several varieties of amenorrhœa are included in this group.

Adolescent Amenorrhœa.—The age at which menstrual life is entered upon differs in various individuals. Some girls, though in good health, do not begin to menstruate until they are 17 or 18 years old or even later. In one case in our experience the periods did not begin until the patient was 30 years old and had been married for some time. Three years later she had a child.

Some women never menstruate throughout their lives, although examination discloses no obvious abnormality in their sexual organs.

The absence of the menstrual flow, apart from the physiological suppression of pregnancy, does not by any means indicate or necessitate ill-health ; indeed it may very well be argued that the occurrence of the menstrual function is much more often a cause of discomfort or illness than its absence or suppression.

It is important to remember this, because often a mother brings her young daughter to the practitioner on account of delay in the appearance of the menses although the girl is in excellent health, for there exists a popular fallacy that such amenorrhœa must necessarily be harmful. Further, it is very common at the outset of menstrual life for long intervals to occur between the periods—thus a girl may begin to menstruate at 14 years and after a few months cease until she is 15 or 16, although she is in good health. Mothers should be informed that in the absence of ill-health this irregularity is not to be worried about, for such solicitude

may impress itself on the girl's mind and lead to morbid introspection and hypochondria is.

Amenorrhœa of Chlorosis.—This is the commonest type of amenorrhœa met with in young women.

The cessation of the periods is *gradual*, the actual stoppage being preceded by scanty and delayed losses. The patient in most instances presents the appearance typical in chlorosis, though cases are not infrequently met with in which, with an identical manner of cessation, a ruddy plethoric appearance is observed. The patients are invariably more or less constipated and complain of indigestion and palpitation on exertion.

Amenorrhœa due to Early Pregnancy.—Cases of amenorrhœa due to pregnancy chiefly come into the second group, namely, those in whom a definite physical condition of the generative organs is discoverable on examination. As, however, the enlargement of the uterus due to a pregnancy of not more than one or two months' duration is often with difficulty made out, the reader may here be reminded that the cessation of the periods due to this cause is *abrupt* in nearly all cases, and is not preceded by progressive lessening of the monthly flow in quantity and frequency.

Amenorrhœa of Lactation.—Suckling inhibits menstruation to a variable extent. Some women continue to have monthly losses throughout the period of breast-feeding. In others again, complete amenorrhœa continues during the time of nursing even if this be prolonged to over two years, though most commonly menses return from the seventh to the ninth month in spite of the continuance of lactation. In other cases only two or three periods are suppressed, the flow then returning periodically throughout the rest of the epoch. After weaning the child the menses usually return within two months—sometimes very irregularly, but in some cases their reappearance is delayed for four, five, or six months. Cases are sometimes met with in which a permanent menopause follows an excessive period of breast-feeding. In such the uterus is found superinvoluted (see p. 197), possibly as a result of the unnaturally long activity of the mammary glands.

Amenorrhœa of the Climacteric.—The climacteric usually occurs between the ages of 46 and 50. In some women, however, the periods may continue until 52 or even later. This is especially the case when the uterus is the seat of myomatous growth or of fibrotic degeneration, for both these conditions prolong the menstrual life.

The climacteric may be premature, taking place between 35 and 40 or even earlier. In some of these cases superinvolution has occurred (see p. 197).

The essential feature of the climacteric is not, however, the cessation

of the monthly periods, but the alterations in the economy that take place as the result of the arrest of ovarian activity and the consequent loss of the internal secretion of the ovaries.

Our knowledge concerning the nature and number of the substances contributed by the ovary to the metabolism in the body in general, is at present very small. Since the chief histological difference between the ovary of pre-puberty and post-climacteric on the one hand and that of the active sexual life on the other is the presence in the latter of the corpus luteum, it is reasonably held that this body is the chief source of the internal secretion that determines the sexual characteristics of adult feminine life. It is, however, apparent that it is not the only source, for, as is noted elsewhere, precocious development in children of sexual characteristics is associated with overgrowth or tumour formation of the adrenal glands (p. 51).

Further, perfect development of the secondary feminine characters (breasts, external genitals, etc.) occurs in male pseudo-hermaphrodites, in whom testes exist instead of ovaries. It is probable indeed that the ovary contributes several internal secretions to the economy of the body, only one of which is concerned in the phenomenon of menstruation, for the women who never menstruate throughout their lives may yet have the rest of their feminine characteristics fully developed, nor are all cases of premature menopause associated with the other signs of the climacteric (atrophy of the genital organs, nervous symptoms, etc.).

In the condition known as fibrosis of the ovaries no trace of follicles or corpora lutea may be found in the indurated and shrunken organs, but the feminine traits of these individuals are not less than in normal women. Some of these, indeed, exhibit in an excessive degree the feminine types of neuroticism, eroticism, and hysteria.

The interdependence one on another of the internal secretory glands, the ovaries, the thyroid, the suprarenal glands, hypophysis cerebri, and pineal bodies, has been pointed out by Blair Bell, and he adduces evidence showing that they are complementary and sometimes supplementary to one another. Certain it is that a menopause does not necessarily imply a climacteric if under that term we include all those phenomena that result from cessation of the internal secretory products governing sexual life and characteristics.

Amenorrhœa following Operation.—Operative removal of both ovaries results in permanent amenorrhœa in most instances. It is, however, not infrequent for double oophorectomy to be followed by irregular excessive losses of blood, especially when it has been performed for inflammatory disease of the appendages and the uterus has been conserved. Hysterectomy, unless very partial, of course produces a menopause.

Besides the amenorrhœa that necessarily results from such operations, there is another type met with in which the cessation of the periods occurs, although neither the ovaries nor the uterus has been removed. Such a result is usually attributed to the " shock " of the operation, but we have no certain understanding on the matter. Such suppression of the menses may be temporary or permanent.

It is obviously possible for the natural climacteric to coincide with a surgical operation.

Amenorrhœa due to Constitutional Conditions.—The periods may stop in certain acute toxic conditions such as the specific fevers. Certain chronic diseases are sometimes accompanied by amenorrhœa—thus in advanced tuberculosis, cardiac disease, and myxœdema the periods are often absent. The periods may also be suppressed in many forms of anæmia, but not so frequently as one would expect by analogy with chlorosis. On the other hand, the profoundest anæmia is often caused by profuse menorrhagia.

It would appear, therefore, that something more than mere poorness of the blood in erythrocytes or hæmoglobin is required to produce amenorrhœa.

Certain poisons may produce amenorrhœa, such as lead and morphia.

Amenorrhœa of Obscure Origin.—In certain cases of amenorrhœa it is impossible to assign the definite cause for the condition, nor is it by any means always associated with ill-health. The periods are sometimes absent throughout life without any obvious physical abnormality, the individual appearing to be none the worse for it. Apparently healthy women may only menstruate at long intervals, while in others regular menstruation is interspersed with a period of amenorrhœa. The health of many of the patients of this class is obviously below par, although no definite disease can be assigned to it. They are thin, ill-nourished, hysterical, and hypochondriacal. Amenorrhœa sometimes follows mental shock or sudden change of occupation or environment. No cause can be assigned for this.

AMENORRHŒA WITH PHYSICAL SIGNS OF CHANGE IN OR ABNORMALITY OF THE PELVIC ORGANS.

Under this head the following types of amenorrhœa will be discussed :—

Amenorrhœa with Evidence of Congenital Abnormality.—If the uterus or ovaries are congenitally absent no menstrual flow occurs. A similar result usually accompanies imperfect development of these organs, though not necessarily so. Absence of the vagina either in whole or in part, or failure of that canal to unite with the urogenital sinus, will prevent the menstrual flow (if such occurs) from reaching the exterior.

The blood then becomes retained either in the vagina above the seat of obstruction or, in the case of absence of the vagina, in the uterus. The amenorrhœa under such circumstances is therefore *apparent* only.

Of all congenital defects causing apparent amenorrhœa that is the commonest usually miscalled " imperforate hymen," for the condition is really due to the lower end of the vagina failing to unite with the urogenital sinus. The hymen itself is not imperforate, but may be seen stretched out on the septum closing the vaginal orifice.

In such circumstances the menstrual blood poured into the vagina accumulates there until that canal becomes exceedingly distended.

At first pain is not complained of, because the vagina readily stretches, but later on, when its capacity is beginning to be utilized to its fullest and the uterus experiences difficulty in driving more blood into it, the patient at the time of each monthly period is in much distress. On examination a very palpable abdominal tumour can be felt ; it is the distended vagina with the uterus on the top of it ; while on examining the vulva the septum closing the vaginal orifice is seen very tense and bulging, and of a bluish colour from the blood contained behind it. In neglected cases the uterine tubes become distended with blood as well, and a greater or lesser degree of pelvic peritonitis is set up (see pp. 150, 152, and 268).

Amenorrhœa with Enlargement of the Uterus.—There are only three conditions in which, before the climacteric, an enlarged uterus is associated with amenorrhœa—namely, pregnancy, hæmatometra, and pyometra. The two latter conditions are so exceedingly rare that for practical purposes it may be accepted that pregnancy exists when in a woman of child-bearing age definite enlargement of the uterus is associated with stoppage of the periods (see p. 190).

In all other varieties of uterine enlargement the periods are either unaltered or are excessive, or irregular or continuous hæmorrhage is present (see pp. 53, 56, and 59).

It is further to be remembered that in the earlier months, before the fœtal signs have appeared, the diagnosis of pregnancy rests on the finding of the syndrome of amenorrhœa with an enlarged uterus. The difficulties in the diagnosis of early pregnancy therefore depend either upon absence of, or doubt attaching to, the history of amenorrhœa, or inability on the part of the practitioner to be sure that the uterus is enlarged.

In regard to the first of these it may be emphasized that early pregnancy is not infrequently accompanied by irregular losses of blood, and that in a good many cases at least one period occurs after fertilization (see p. 51). This important point is further considered on page 54. Patients sometimes deny that they have amenorrhœa in order to mislead the practitioner, or they may allege it when it does not exist for the same reason. Thus girls illegitimately pregnant are frequently untruthful

when questioned as to their symptoms, whilst barren women anxious to become pregnant sometimes allege the symptoms though they have them not. Similarly, unprincipled women for the sake of blackmail, or condemned prisoners in the hope of reprieve, may try to deceive the doctor who has to investigate their state.

The ease with which the enlargement of the uterus due to pregnancy is made out varies in different patients. The gravid organ is often difficult to feel, especially in stout persons. Retroversion, especially when the axis of the uterus corresponds with that of the upper part of the vagina, makes an appreciation of the size of the organ more difficult. In other cases the practitioner, though he even feel a mass of some sort in the pelvis and lower abdomen, cannot be sure that it is the uterus. The features characterizing a pregnant uterus, a myomatous uterus, and an ovarian tumour respectively are considered on pages 131, 161, and 143. It may here be emphasized that the distended bladder very closely simulates a gravid uterus both in contour and consistence.

Amenorrhœa associated with an Extra-uterine Tumour.— Extra-uterine gestation before rupture of the sac is usually accompanied with amenorrhœa like normal pregnancy. It is rare, however, for the practitioner to be called upon to investigate the condition at this stage, because in the vast proportion of these cases no untoward symptoms are noticed so long as the gestation sac remains unruptured, and rupture of the sac is very shortly followed by hæmorrhage from the uterus (see p. 60).

In the unusual event, however, of tubal erosion, the gestation survives to the later months, or even to term, with complete or almost complete amenorrhœa. In such the medical man may be called upon to examine the patient either to confirm the fact of pregnancy or because the patient herself deems it to be abnormal. The diagnosis of these rare cases is considered on page 136.

Ovarian tumours occurring during menstrual life do not, as a rule, cause amenorrhœa, but merely scanty or irregular menstruation. When the periods are completely suppressed it suggests that the growth is involving both ovaries to total destruction. Such condition is usually due to malignant disease or papilliferous cyst formation. Such cases are important, because these varieties of ovarian tumour more than any others present signs capable of being mistaken for pregnancy (see p. 139).

Extra-uterine tumours of inflammatory origin may be associated with amenorrhœa caused either by inflammatory destruction of the corpus luteum or by an accompanying acute inflammation of the endometrium. Thus acute ovarian and tubal inflammation is not infrequently accompanied by suppression of a period. This is especially common with ovarian abscess, which for this reason may simulate the clinical features of a ruptured extra-uterine gestation very closely (see p. 235).

Acute endometritis arrests the menstrual flow, because it causes coagulation-necrosis of the superficial layers of the endometrium and thrombosis of the capillaries there. Such amenorrhœa is typically seen in fulminant gonorrhœal infection of the uterus (see p. 68).

UTERINE HÆMORRHAGE.

Uterine hæmorrhage is usually classified according to whether it occurs at the monthly periods (menorrhagia) or irrespective of these epochs (metrorrhagia).

This grouping is, however, open to the objection that it is impossible to draw a line between bleeding that in the first instance is physiological and one that from the outset is pathological.

We shall therefore consider the subject under three heads :—

1. Periodic hæmorrhage.
2. Irregular hæmorrhage.
3. Continuous hæmorrhage.

PERIODIC HÆMORRHAGE.

As periodic hæmorrhage is nearly always menstrual, it will be pertinent here to consider the source and character of the menstrual discharge in normal circumstances.

The flow comes from the corporeal endometrium, from which it escapes by an oozing from the surface. This oozing is preceded by capillary congestion of and extravasation into the superficial layers of the mucous membrane.

Blair Bell has stated that menstrual blood differs from all other blood in that—

1. It contains an excessive amount of calcium salts.
2. There is an absence of fibrin ferment.
3. It does not clot in consequence of the second-mentioned characteristic.

The process of its derivation is therefore something more than a mere escape from ruptured capillary vessels ; it is a selective abstraction on the part of the cells of the endometrium.

The quantity passed varies, within normal limits, in different women. It is roughly estimated by the number of diapers or sanitary towels used during the period. This varies from eight to sixteen in healthy women.

The duration and frequency of the flow also varies in different women. The duration may be as short as two days or as long as seven days,

while the loss, though usually recurring every twenty-eight days, may do so as often as every twenty-one days or as infrequently as every thirty or thirty-two days.

The age at which menstrual life is entered upon is also variable. Most girls begin to menstruate between the ages of 12 and 15. Some begin earlier—at 10 or 11 ; while in others again it is postponed till 16 or even later.

The phenomenon of menstruation is held to depend upon the presence in the ovary of a functional corpus luteum.

The researches of T. Stevens and others have shown that although before puberty a degree of development of the Graafian follicle occurs, yet the process aborts without giving rise to a corpus luteum.

The formation of this body, after dehiscence of the follicle from certain of the cells of the ovarian stroma, ushers in puberty.

In structure the corpus luteum consists of closely packed ovate cells of large size, bearing a striking resemblance to those of the cortex of the adrenal bodies, and it is regarded at the present day as a gland producing an internal secretion which determines the phenomena betokening sexual maturity. With the climacteric the corpus luteum ceases to be formed, and, moreover, both clinical and experimental evidence exists showing that its destruction during sexual life is followed by suppression of the next menstrual flow.

The menstrual bleeding may be too great either by reason of excessive flow, abnormal duration, or too frequent recurrence.

As regards excessive flow, the reader is reminded that some women habitually lose a great deal of blood at these times without influence on their general health. When investigating a case of alleged menorrhagia regard must be paid to the patient's general appearance, the number of diapers or sanitary towels used, and the presence or not of clots in the discharge.

A woman who has been losing excessively every month for some time will be anæmic. A patient who is using twenty or more towels during each period is certainly losing too much. Clots, at all events when large, are abnormal ; they indicate some unhealthy condition of the endometrium which permits the passage of fibrin ferment (*vide ante*), and though not necessarily associated with excessive bleeding, usually betoken it.

In considering the duration of the flow, the natural habit of the individual should be taken into account.

The frequency, as has been remarked, varies normally between twenty-six and thirty days in different persons. The practitioner should remember that women often count from the end of one period to the beginning of the next, and hence may state that they are " poorly " every three weeks, when, as a matter of fact, they are so every four weeks,

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counting from the beginning of one period to the beginning of the next.

Patients suffering from excessive periodic bleeding may be divided into two groups :—

1. Those in whom gross physical signs of disease cannot be found, and
2. Those in whom gross physical signs are discoverable.

PERIODIC HÆMORRHAGE (MENORRHAGIA) WITHOUT GROSS PHYSICAL SIGNS.

There are three factors in the mechanism of menstruation—the uterus, the ovaries, and the blood. In the group of cases with which we are now dealing, the fault most often lies with the last two.

It is, of course, obvious that the exclusion of uterine disease by ordinary examinational methods can rarely be absolute, because fibrotic or other degeneration of the uterine wall, as also some varieties of endometritis and small intra-uterine polypi, are often undetectable by such means.

There are, however, certain clinical varieties of menstrual hæmorrhage which are properly discussed under this head.

Adolescent Periodic Hæmorrhage.—The practitioner will occasionally have brought to him young girls from 12 to 16 years of age, on account of excessive monthly hæmorrhage. The bleeding may be very severe and induce great anæmia or even cause death. No explanation of these cases is at present forthcoming. No abnormality can be discovered either in the uterus or elsewhere.

Climacteric Periodic Hæmorrhage.—It is commonly believed that, as the climacteric approaches, excessive bleeding from the uterus, menstrual or otherwise, is to be expected as part of the phenomena of " the change." This popular belief is strongly to be combated as dangerous and devoid of foundation ; for though it is true that between 40 and 50 a woman is most liable to excessive bleeding from the uterus, yet such bleeding is, in nearly all cases, dependent on some disease of this organ, for it is at this epoch of a woman's life that the symptoms of myomata, uterine carcinoma, and uterine fibrosis most commonly declare themselves.

The perpetuation of this popular fallacy has led and still leads to great wastage of health and life, because women so suffering postpone seeking medical advice in their mistaken belief.

While excessive periodic bleeding at all times demands attention, that occurring as the age of the climacteric approaches specially demands immediate investigation, nor should any case be labelled as " climacteric " until the question of uterine disease has been absolutely ruled out.

The term, indeed, is chiefly applicable to those cases in which an

excessive flow alternates from time to time with periods of amenorrhœa lasting several months. In such the bleeding is probably due in some way to the various changes of the menopause, and it is to be noticed that although the amounts lost are excessive as compared with the previous habit of the patient, yet they are more than balanced by the intervening months during which the patient sees nothing.

Periodic Hæmorrhage during Pregnancy.—Since in early pregnancy the physical signs indicating enlargement of the uterus may not be apparent, it is necessary to consider menorrhagia due to pregnancy in this group as well as in that which follows.

While pregnancy is normally associated with cessation of the periods, it is to be remembered that occasionally a menstrual period may follow conception. When this is the case it nearly always differs from those that have preceded pregnancy, usually in the direction of scantiness, but sometimes by being excessive, both in flow and duration.

Occasionally regular periods may occur for three months, *i.e.* until the obliteration of the uterine cavity. It is a fact, however, that an early miscarriage is specially likely to occur about the time the period is due, and the hæmorrhage threatening this event may be mistaken for normal menstruation (see p. 54).

Periodic Hæmorrhage associated with certain Hæmorrhagic States.—As a rule, uterine bleeding does not form part of the general hæmorrhagic states, and in the various types of pernicious anæmia, purpura hæmorrhagica, and so forth, the periods are either unaltered or reduced in amount, or even suppressed altogether. Occasionally, however, the uterus may take part in the general condition and the loss be excessive or even alarming.

Post-Lactational Periodic Hæmorrhage.—As a rule, lactation is accompanied by amenorrhœa, though by no means always so (see p. 43). When the menses appear again, either spontaneously or because the child is weaned, it is not very uncommon for the first few periods to be excessive in quantity.

Precocious Menstruation.—Menstruation may begin as early as 8 or 9 years of age, especially amongst the Eastern races or in children whose sexual sense has been prematurely stimulated.

Occasionally, however, the onset may be much earlier than this, even shortly after birth. In such cases abnormally early development of the pubic hair and the breasts is observed.

These phenomena have been shown to be due, in almost all cases, to the presence of hypertrophy or a definite tumour of the adrenal bodies of one or both sides.

The relation borne by these and other ductless glands to the sexual mechanism is discussed on page 44.

Periodic Hæmorrhage due to Obscure Causes.—Cases of menor-
rhagia occasionally occur in young women, often virgins, in whom no abnor-
mality of the uterus or ovaries can be discovered, even when these organs
have been examined after they have been removed to cure the condition.
The hæmorrhage may be exceedingly severe and intractable to all treat-
ment, short of radical operative measures.

The causation is obscure ; probably it depends upon some abnor-
mality of the ovarian secretion and particularly of the corpus luteum.

**Periodic Hæmorrhage due to Uterine Fibrosis, Small Myomata,
and Polypi.**—Menorrhagia due to the above conditions is included in this
group because no definite physical signs indicative of these causes may
be discoverable, except by exploration of or after operative removal of
the uterus.

As a rule, the conditions named do produce definite physical signs
whereby their presence may be suspected or known ; but in a proportion
of cases examination reveals nothing definite, the uterus appearing of
normal size and consistence, and the cervix being to all intents ap-
parently normal.

For further information concerning these conditions, the reader is
referred to pages 194, 195.

PERIODIC HÆMORRHAGE ASSOCIATED WITH GROSS PHYSICAL SIGNS.

When menorrhagia is associated with gross physical signs of abnor-
mality of the uterus or appendages, the diagnosis and treatment of its
cause is far easier than is the case in the preceding group.

It still remains, however, to decide whether the obvious abnormality
is the cause of the undue bleeding.

Periodic Hæmorrhage with Uterine Enlargement.—Such enlarge-
ment may be due to myoma, adeno-myoma, endometritis, intra-uterine
polypi, uterine fibrosis, subinvolution, or pregnancy. Malignant disease
is characterized by irregular or continuous hæmorrhage — not by
menorrhagia.

The diagnosis of myomata is usually easy (see p. 161), but small
submucous or interstitial tumours may produce an enlargement of the
uterine body not detectable from that due to chronic endometritis, uterine
fibrosis, and subinvolution. Polypi, so long as they are intra-uterine, can
only be proved to exist by operative dilatation of the cervix.

The enlargement due to adeno-myoma, endometritis, subinvolution,
or fibrosis is symmetrical, as may be that due to myoma. Inflammatory
enlargement is usually associated with the signs of chronic cervicitis.

The fact that an excessive loss at the monthly period may usher in
pregnancy has already been referred to (p. 51).

Periodic Hæmorrhage with Uterine Displacement.—The extent to which displacement of the uterus *per se* can be the cause of profuse monthly losses is doubtful. Probably it has little effect in this direction, but in so far as it tends to perpetuate an unhealthy congested state of the organ precedent to or synchronous with the displacement, it is often thus associated.

Periodic Hæmorrhage with Signs of Appendage Disease.—Inflammatory disease of the appendage is often accompanied by menorrhagia, in the first instance, because in many cases the uterus is also unhealthy ; and in the second, because the condition, if implicating the ovary, probably alters its internal secretion.

Thus patients suffering from acute or chronic salpingitis often have menorrhagia

New growths of the ovary may have a like effect, for though, as a rule, ovarian cysts, fibromata, carcinomata, and so forth are associated with scanty or even suppressed menstruation (see p. 47), yet occasionally there is menorrhagia.

IRREGULAR HÆMORRHAGE.

No hæmorrhage is truly " menstrual " unless it arises as the result of changes taking place in the endometrium due to the influence of ovarian secretion. Menstrual hæmorrhage may itself be very irregular, the " periods " being either postponed or anticipated.

Besides this, however, the type of bleeding with which we are now to deal contains other varieties, some of which have no connection with the menstrual cycle, and others in which that connection is very doubtful.

As with periodic hæmorrhage, we can divide patients suffering from irregular hæmorrhage into two groups :—

1. Those in whom gross physical signs of disease cannot be found.
2. Those in whom a definite abnormality is discoverable.

IRREGULAR HÆMORRHAGE WITHOUT GROSS PHYSICAL SIGNS.

Irregular Hæmorrhage in Childhood.—Irregular bleeding in childhood without physical signs is very unusual. Occasionally a small quantity of blood may escape from the vagina for a few days following birth. A rare form of sarcoma of the cervix occurs in children which at its outset is marked by irregular bleeding.

Irregular Hæmorrhage in Adolescence.—At the beginning of menstrual life the periods often are very irregular, but they should not be excessive. Irregular excessive flow is met with in young girls in the same circumstances as are considered on page 50.

In a case of this type upon which one of us performed hysterotomy, a local fungating hypertrophy of the endometrium presenting many small cysts was found. Its excision was followed by permanent cure.

Irregular Hæmorrhage at the Climacteric.—It has already been urged (see p. 50) that the term "climacteric" menorrhagia should be limited to those cases in which occasional excessive losses are balanced by intervals during which no periods occur.

Irregular hæmorrhages other than these are always to be regarded with suspicion and immediately investigated.

In many cases a gross cause for the bleeding will be found ; even if it is not, the practitioner should be very wary of ascribing the bleeding to the climacteric, for uterine fibrosis is most often met with at this period, and further intra-uterine polypi if small, and carcinoma beginning in the body of the uterus or high up in the cervical canal, are often not detectable by ordinary methods of examination.

Irregular Hæmorrhage due to Early Pregnancy.—It has been shown that one or occasionally more periods may follow conception (see p. 51). Still more common is it for bleeding to occur at irregular intervals in the early months of gestation. Such losses are usually slight, but may be excessive.

This fact is important, because in such cases the question of pregnancy is apt to escape consideration (see p. 132).

When a woman of child-bearing age, who previously has been regular, comes complaining of irregular losses of blood, the possibility of early pregnancy should be taken into account, although no monthly periods have been missed. Such hæmorrhages do not necessarily imply death or disease of the ovum, nor inevitable miscarriage, for in many cases the blood comes from the decidua vera, or the vascular tissues of the cervix. Irregular hæmorrhages in early pregnancy are apt to be particularly misleading if mole formation has occurred in the uterus, because if this has happened in the first month the size of the uterus may be so little above the normal that enlargement cannot be made out, and hence the possibility of a gestation as the cause of hæmorrhage may be overlooked.

Irregular Hæmorrhage due to Extra-uterine Gestation.—Irregular bleeding from the uterus may be due to an extra-uterine pregnancy, the mass of which is too small to be detectable.

Irregular Hæmorrhage after Parturition.—In most of the cases that the practitioner sees of irregular hæmorrhage after parturition, a history of pregnancy is given, and there are moreover definite signs of subinvolution present.

There is, however, a further class of case in which no such history is available and in which the uterus does not present anything abnormal, although the bleeding really followed an early miscarriage.

Some of these women are unmarried and have concealed the fact of the pregnancy from their parents or relatives.

The possibility, therefore, of irregular hæmorrhage in an unmarried girl being due to fragments of an early miscarriage retained in the uterus must be borne in mind, when on examination it appears likely that intercourse has taken place.

The practitioner should, of course, be most careful to keep this suspicion from the relatives or friends of the patient, though he is justified in privately asking the patient whether such a cause for the hæmorrhage is possible.

Irregular Hæmorrhage after the Menopause.—Irregular hæmorrhage from the uterus, after the menopause, is a symptom requiring immediate attention, because the commonest cause of it is malignant disease of the uterus (see pp. 168, 169, 173, and 247).

If, on examination, a gross cause for it cannot be found, the diagnosis rests between carcinoma of the body of the uterus, endo-cervical carcinoma, endometritis, and the accidental giving way of a vessel in the endometrium.

It is to be remembered that carcinoma of the corpus frequently does not cause enlargement of the uterus, and that in many cases the cervix is not patulous, so that the presence of the growth cannot be ascertained without previous instrumental dilatation.

It has also to be borne in mind that the discharge may for a long time consist of pure blood without any odour, and further that this discharge is frequently intermittent.

As regards carcinoma beginning in the senile cervix the obscureness of the physical signs is further referred to on page 249.

Endometritis of the senile uterus does undoubtedly give rise to occasional losses of blood, but there is, in addition, a continued serous or sero-purulent discharge which is often very foul. It is most important to remember that senile endometritis is in many cases the prelude of carcinoma.

The term " metrostaxis " is sometimes applied to those cases in which occasional bleeding occurs from the uterus without the presence of gross disease therein. It is probably due to the rupture of vessels in the degenerate endometrium. This diagnosis, however, should never be made until the absence of intra-uterine disease has been proved by exploration of the organ.

A fibroid too small to be detected, short of exploring the uterus, may give rise to irregular hæmorrhage after the menopause, or may be the accidental concomitant of metrostaxis.

Irregular Hæmorrhage due to Obscure Causes.—In some women the menses are habitually very irregular. In others they are from time

to time irregular without apparent reason or cause. Cases such as these must, in the absence of physical signs of disease, be ascribed to irregular ovarian activity.

So long as the amount lost is not excessive the condition is not serious, and the patients usually seek advice because they are disturbed in their minds rather than for any manifestation of ill-health.

Occasionally, however, the irregular losses are excessive or long-continued. In such, the possibility of some small intra-uterine growth or degeneration of the uterine wall must be taken into account.

IRREGULAR HÆMORRHAGE ASSOCIATED WITH GROSS PHYSICAL SIGNS.

When irregular hæmorrhage is associated with gross physical signs of disease, its causation is usually obvious.

The principal conditions thus accompanied are pregnancy, sub-involution, endometritis, uterine fibrosis, myomata, adeno-myoma, polypi, and malignant disease ; less commonly inflammatory states of the appendages will be found, or new growths starting in these structures.

Irregular Hæmorrhage with Uterine Enlargement.—When with irregular hæmorrhage, enlargement of the uterus is found, the first point to be determined, in women of child-bearing age, is the question of possible pregnancy.

The frequency with which early gestation is accompanied by irregular bleeding has already been drawn attention to. If the uterus is found to be considerably enlarged, the first point is to distinguish between pregnancy and a myoma. This diagnosis is fully discussed on page 139.

Slight enlargement of the organ is compatible with subinvolution, endometritis, uterine fibrosis, small myomata, adeno-myoma, carcinoma of the body, and polypi, and the diagnosis will have to be determined on the past history and age of the patient and on the collateral signs. In young women, subinvolution, endometritis, or mucous polypi are the most likely conditions ; while in older patients the question of fibrosis, a small myoma or adeno-myoma, will have to be considered. In women past the age of 45, uterine enlargement with irregular bleeding is most likely to be due to myomata, adeno-myomata, fibrosis, or the fungating type of carcinoma of the corpus.

The bleeding due to fibrosis very rarely occurs after the menopause. A myoma also does not as a rule cause hæmorrhage once the climacteric is past. If such bleeding occurs it is probably caused by carcinoma beginning in the endometrium or sarcomatous degeneration of the tumour. Much more rarely it is due to attempts on the part of the uterus to extrude the myoma. Carcinoma of the corpus is a rare disease under 45 years of age. Most commonly the symptoms appear shortly after the menopause.

Irregular bleeding associated with great enlargement of the uterus is probably due either to pregnancy, myomata, adeno-myomata, or carcinoma beginning in a myomatous uterus.

Irregular Hæmorrhage associated with Signs of Uterine Inflammation or Abnormal Conditions of the Cervix.—Acute endometritis may occasion irregular and sometimes profuse hæmorrhage from the uterus. Chronic endometritis is frequently thus associated (see p. 193). In such cases evidence of the inflammatory process going on in the uterine body will be disclosed by the state of the cervix, cervicitis with erosion being invariably present as well.

The bleeding in such cases is due to the general hyperæmic state of the organ, and is provoked in some cases by examination, douching, or coitus.

In regard to cervical erosion, it must be borne in mind that though occasional slight oozing of blood may be provoked from the diseased surface by rough usage during examination, coitus, and so forth, yet this symptom is so frequently associated with carcinoma of the cervix that its presence is an indication for immediate investigation of the precise nature of the cervical condition.

The diagnosis of carcinoma of the cervix is fully considered on pages 246 and 247 ; but it may here be emphasized that while, as a rule, the neoplasm gives rise to continuous loss, yet in its incipience the bleeding may be only occasional, while in some cases this feature is maintained even up to a late stage.

Mucous polypi growing from the cervix often cause slight irregular bleeding because of oozing from their vascular surface. On the other hand, myomatous polypi thus originating frequently do not give rise to bleeding, because they are poorly supplied with blood.

Mucous and myomatous polypi, originating in the corpus but extruding through the cervix, give rise to both menorrhagia and irregular hæmorrhage, the blood in these cases coming chiefly from the endometrium (see p. 194).

A rare cause of irregular uterine hæmorrhage is chronic inversion of the uterus.

Irregular Hæmorrhage with Signs of Appendage Disease.—Many conditions of the appendages give rise to irregular uterine bleeding. Most important among these is extra-uterine gestation (see pp. 6?, 136, and 185).

Salpingitis is often accompanied by irregular bleeding which owes its origin to the co-existence of an inflamed state of the endometrium, though disturbance of ovarian activity may be an additional factor.

Neoplasms of either the ovary or uterine tube may be similarly associated. As regards the ovary, innocent growths and particularly

cysts are generally accompanied, not by any alteration in the normal menstrual cycle, but by scanty loss at those times ; but with malignant disease of the ovary or tube, irregular uterine hæmorrhage is by no means uncommon. Many of these women have passed the menopause, and the renewal of bleeding may be the first symptom noticed. The reason why malignant disease of the ovary not infrequently causes bleeding from the uterus is not clear. After operative removal the uterus is not, as a rule, found to be the seat of gross secondary deposit affecting its inner surface (see p. 175).

Malignant disease of the uterine tube is in many cases associated with characteristic intermittent discharges of blood or sero-sanguineous discharge (see p. 186).

CONTINUOUS HÆMORRHAGE.

Continuous hæmorrhage, on the whole, argues a greater degree of pathological change in the uterus than does either periodic or irregular bleeding. It is peculiarly associated with malignant disease, and for this reason alone all cases presenting it require immediate investigation.

Patients suffering from continuous hæmorrhage can be divided into two groups :—

1. Those in whom gross physical signs of disease are absent.
2. Those in whom gross physical signs of disease are present.

CONTINUOUS HÆMORRHAGE WITHOUT GROSS PHYSICAL SIGNS.

Continuous bleeding from the uterus, unassociated with obvious physical abnormality of the pelvic organs, may be due to retained fragments of gestation products, too small to cause obvious uterine enlargement ; to fibrotic degeneration of the uterine wall ; or to carcinoma of the uterus. There are also rare cases in which continuous bleeding from the uterus is maintained without any cause being discoverable. Such anomalous bleeding may occur in quite young women or even in adolescents (see pp. 50 and 53).

It cannot be too strongly emphasized that continuous bleeding is not one of the phenomena of the menopause, and that its occurrence at this epoch, more than any other time, demands immediate attention.

In this class of bleeding with which we are now dealing, the diagnosis, as a rule, can only be made absolute after exploration of the uterus.

As regards continuous bleeding, due to retained gestation products, it may be remarked that a very small fragment may be responsible for it, while in some cases nothing at all can be found in the uterus, although in such cases curettage is nearly always followed by cessation of the loss.

Uterine fibrosis, though, as a rule, associated with some enlargement of the uterus, is not by any means always so. It is most commonly characterized by periodic or irregular hæmorrhage—only in its terminal stages does the bleeding become continuous.

Still more important is it to bear in mind that carcinoma of the corpus only enlarges the uterus when it assumes a fungating form. The ulcerative type leaves the organ unaltered in size, and as the disease very commonly occurs in elderly persons, the uterus may be quite small.

Endo-cervical carcinoma may be quite undetectable short of dilatation of the cervix. The same statement applies to the senile atrophic form of the disease (see p. 248).

CONTINUOUS HÆMORRHAGE ASSOCIATED WITH GROSS PHYSICAL SIGNS.

Continuous Hæmorrhage associated with Uterine Enlargement.

—Some cases of pregnancy are associated with more or less continuous loss of blood. In nearly all instances this is due to a diseased state of the gestation products resulting in mole formation. Many moles do not give rise to any bleeding until immediately before they are expelled, but others are associated with more or less constant discharge of blood or brownish-coloured discharge. Bleeding is particularly common in the case of a vesicular mole (see p. 136).

The retention of large masses of gestation products after labour or miscarriage is accompanied by continuous loss of blood, as is the development in the uterus of chorio-carcinoma (see p. 193).

Myomata are not as a rule the cause of continuous bleeding from the uterus—the loss characteristic of these tumours being truly periodic and menstrual. Whenever, therefore, a myomatous uterus begins to bleed continuously, the probability of some change having supervened in the tumour must be borne in mind. The most frequent, as well as the most serious, cause of this change in the symptomatology is development of malignant disease, and especially of carcinoma of the corpus. Continuous loss is also seen with myomata which are in process of extrusion from the uterus, and less commonly with certain of the degenerative changes to which they are liable.

As has been already stated, uterine fibrosis not infrequently produces a moderate degree of uterine enlargement, sufficient to render the diagnosis between this condition and a small myomatous uterus difficult or impossible (see p. 195).

We have also shown that this morbid state of the uterus, though usually productive of periodic or irregular hæmorrhage, may be the cause of continuous bleeding.

Carcinoma of the corpus, if of the fungating type, enlarges the uterus

to a variable extent. The enlargement is never very great (rarely exceeding that of a three months' pregnancy unless the condition has complicated pre-existent myomatosis) and is uniform and soft. In many of these cases the finger can be passed through the cervix to feel the growth that lies above it.

Continuous Hæmorrhage associated with Signs of Disease of the Cervix.—By far the commonest cause of continuous bleeding from the cervix is carcinoma growing in that situation. This disease is very fully dealt with on page 247.

A myoma in process of extrusion through the cervix bleeds continuously, as a rule, but once extruded into the vagina, the hæmorrhage may cease.

Vascular mucous polypi may occasion a slight continuous blood-stained discharge.

Continuous Hæmorrhage accompanied by Signs of Disease of the Appendages.—One of the most important causes of continuous bleeding falling under this group is tubal gestation. The hæmorrhage, which may go on for several weeks after the rupture of the sac, chiefly comes from the tube itself and indicates a hæmato-salpinx leaking into the uterus. In those cases, however, in which a cast is passed, part of the blood may be due to the exfoliation of the decidua.

Cases of this type mimic bleeding from the retention of gestation products in the uterus after miscarriage, but on examination a large pelvic mass (hæmatocele, hæmato-salpinx, or both) is discovered in the pelvis (see pp. 69, 136, 185, and 227).

Inflammatory conditions of the appendages are not commonly the cause of continuous loss, but malignant growths originating in that situation, such as carcinoma or sarcoma of the ovary, or carcinoma of the uterine tube, may produce it (see pp. 175 and 186).

HÆMORRHAGE ORIGINATING FROM THE VAGINA OR VULVA.

The vagina and vulva are not commonly the seat of bleeding. As regards the former, malignant disease is the most frequently met with cause in this connection. Both carcinoma and sarcoma are rare in this situation. One of us has recorded a case in which profuse hæmorrhage originated from a chorio-carcinomatous deposit there.

The vagina may be wounded or even spontaneously rupture, and it has been lacerated and perforated during coitus.

A long-retained pessary may ulcerate into a vessel and cause alarming bleeding.

The commonest cause of vulval bleeding is a urethral caruncle. It is also met with as a symptom of carcinoma of the vulva or urethra. Wounds of the vulva bleed copiously—such may be caused by a blow or a fall across some hard object. Laceration of the hymen at the first attempt at conjugal relations is usually accompanied by some bleeding, and occasionally if an abnormally large vessel is torn across it may be severe.

VAGINAL DISCHARGE.

A discharge flowing from the vagina may originate there or may proceed from the cervix, the body of the uterus, the uterine tubes, the bladder, the rectum, the peritoneal cavity, the pelvic cellular tissue, or from the pelvic bones themselves.

The subject, therefore, is a very wide one and may be discussed in several ways. That which we shall here adopt, founded on the character of the discharge, appears to us to be the most useful from the clinical point of view.

Before considering the various abnormal discharges that may flow from the vagina, it will be pertinent first to consider the normal secretions of the genital canal.

NORMAL SECRETIONS OF THE GENITAL CANAL.

The Vulval Secretions.—The skin covering the labia majora contains sebaceous and sweat glands in large numbers. The structures bounded by these are kept moist partly by a slight serous secretion originating as a diffuse oozing from the general surface ; partly by the secretion of certain groups of specialized odoriferous glands (Tyson's glands) scattered here and there about the surface, producing a clear serous fluid ; and partly by the mucous secretion of the vulvo-vaginal glands, which lie on either side of the vaginal introitus. Smegma is not the product of glandular secretion, but represents the desquamated surface cells of the vulval epithelium, which differ from those of the skin proper in becoming fatty instead of keratinized before they are shed.

The secretion of the vulvo-vaginal glands is specially poured out during sexual excitement.

The Vaginal Secretion.—Normally there are no glands in the vaginal wall, though occasionally a few aberrant muciniferous crypts may be found.

The vaginal secretion is a thin milky fluid derived as a general oozing from the whole surface. The fluid as exuded is clear, but becomes milky in appearance from the presence in it, in suspension, of numerous desquamated epithelial cells from the vaginal epithelium. These cells, like those

of the vulva, undergo fatty degeneration before they are cast off. Mixed with the milky-white vaginal secretion is the transparent mucous secretion of the cervix, and since the admixture is usually incomplete the resulting fluid is often " flaky " in appearance.

The vaginal secretion contains many bacteria, among which staphylococcus albus and b. coli are very frequently found.

It is acid in reaction from the presence of lactic acid. This substance was formerly thought to be produced by a bacillus whose special habitat was the vagina. Blair Bell has, however, shown that the same acid is present in bacteria-free hæmatocolpos fluid, so that the bacillus described by Döderlein can take no part in its production.

The secretion of the vagina is normally scanty and no more than enough to keep the surface properly moist.

The Cervical Secretion.—The cervical secretion is derived from a number of racemose glands embedded in the wall of the cervix. It is a clear transparent mucus, and the amount secreted varies in different circumstances and in different individuals. It is always more profuse before and after the menstrual flow, and it is increased during pregnancy, labour, and sexual excitement. The cervix of a married woman secretes more than that of a virgin, because the hyperplasia that the glands undergo during pregnancy always remains to a greater or lesser extent. In the child the cervical glands are small and inactive ; after the menopause they tend to atrophy or may disappear altogether (see p. 65).

The Corporeal Secretion.—The glands of the corporeal endometrium differ from those of the cervix not only in being tubular and unbranched, but in the character of their secretion, which is watery and not mucinous.

In normal circumstances the secretion is small in amount. It is increased just before and especially just after the menstrual flow.

In old age the corporeal glands, together with the whole endometrium, atrophy, until in some cases scarcely any trace of them may be found on microscopical examination.

The Tubal Secretion.—The wall of the uterine tube secretes a thin watery fluid.

The amount exuded under normal circumstances is probably small, and would appear to be discharged into the peritoneal cavity *via* the abdominal ostia.

ABNORMAL DISCHARGES ISSUING FROM THE VAGINA.

Mucous Discharge (Leucorrhœa).—A mucous discharge from the vagina almost invariably originates from the cervix, which alone in normal circumstances possesses numerous muciniferous glands.

It has already been stated that the amount secreted by the cervical glands varies considerably in normal conditions, hence every complaint of mucous discharge is not necessarily the result of a pathological process.

The terms " leucorrhœa," or " the whites," are very loosely used by the laity, and are frequently made to include not only the normal milky-white secretion and the transparent mucus of the cervix, but also muco pus and pus wheresoever originating.   By medical men the word leucorrhœa should be restricted to describe a *mucous discharge from the vagina*.   Cervical discharge as it flows out of the vagina has, however, usually lost its transparent character from admixture with the secretion of the vagina, and instead becomes flaky white or yellow.

It is important for the practitioner to realize that such viscid yellowish discharge is not necessarily purulent, the appearance being often produced by desquamated cells of the vaginal epithelium suspended in the mucus from the cervix.

An excessive discharge of mucus from the cervical glands may be due to hyperplasia or to excessive functional activity.   The commonest cause for it, however, is chronic cervicitis.

The distinction between the two causes is made by examination of the cervix and the finding or not of a cervical erosion (see p. 245).

In cases of pure functional excess the discharge maintains to a considerable extent the transparent appearance that characterizes it as it leaves the cervix, but in inflammatory cases it is often quite opaque, because a degree of vaginitis or vaginal irritation commonly accompanies the condition with excessive desquamation of the vaginal epithelium.

Leucorrhœa is often encountered in virgins, and it has been stated that in such patients no inflammatory lesion of the cervix is present as a rule.   This is incorrect ; excessive physiological function of the cervical glands, being commonly due to subinvolution, is much more frequently met with in parous women than in virgins, in whom leucorrhœa is nearly always due to cervicitis.

Besides cervicitis there are but few causes of a mucous discharge from the vagina.   A cyst of the vulvo-vaginal gland may rupture or leak and cause discharge for a short time.

A most uncommon condition, termed " Adenomatosis Vaginæ," was first described by one of us, in which the entire surface of the vagina was beset with racemose mucous glands from which a glairy transparent secretion continually flowed.[1]

Isolated mucous cysts of the vaginal wall are occasionally met with due to retention in an aberrant vaginal gland ; such cysts may rupture into and discharge per vaginam.

[1] Victor Bonney and Bryden Glendinning, *Proc. Roy. Soc Med*

Very occasionally a mucinoid cyst of the ovary has become adherent to the floor of the pouch of Douglas and perforated into the vagina.

Muco-purulent Discharge.—The remarks already made concerning mucous discharge apply largely to muco-purulent discharge from the vagina, except that a physiological hyperactivity of the cervical glands is out of the question in such cases.

The muco-pus may be formed entirely in the cervix. More commonly, however, it is the result of the admixture of cervical mucus with pus exuded from the surface of the vagina. In all these cases a definite infection exists causing both cervicitis and vaginitis. Microscopical examination of these discharges shows a large amount of desquamated epithelium besides the pus cells.

A suppurating vulvo-vaginal cyst or vaginal mucous cyst may occasion a muco-purulent discharge. In the rare event of a suppurating ovarian mucous cyst discharging through the vagina the same result would follow.

Watery Discharge.—A clear watery discharge from the vagina may originate from the vagina, the body of the uterus, the uterine tube, the bladder, or the ureter.

A vaginal origin is only possible in the case of a leakage or rupture of a vaginal cyst with watery contents. Such cysts are probably derived from the remnants of the Wölffian ducts in the vaginal wall.

A watery discharge originating in the body of the uterus argues an excessive activity of the corporeal glands, and it is indeed characteristic of certain hyperplastic states of its endometrium. It is often seen in association with uterine myomata, for these tumours are frequently accompanied by great overgrowth of the endometrium. The discharge may be constant, but more commonly follows the menstrual flow and lasts for from two or three days to a week or more.

Glandular hyperplasia is often seen in certain stages of corporeal endometritis and most notably in that type known as " villous endometritis," a pre-carcinomatous condition.

Watery discharge may occur from the pregnant uterus in the condition known as hydrorrhœa gravidarum and also as a result of leakage of the liquor amnii.

The uterine tube may give rise to a watery discharge in the case of a leaking hydrosalpinx. The condition is unusual, because with hydrosalpinx as a rule both ostia of the tube are permanently occluded. Occasionally, however, the abdominal ostium alone is sealed, in which case the retained fluid is from time to time forced through into the uterus when the pressure in the sac has risen sufficiently high. Such intermittent distension of the tube is certainly the cause of those cases of " middle pain " in which the pain is associated with a watery discharge

(see p. 104). The subject of hydrosalpinx is considered on pages 151, 206, and 225.

A watery discharge may be due to the incontinent flow of urine, either on account of a relaxed condition of the vesical sphincter or because an adventitious opening into the bladder or ureter exists. These conditions are discussed under their several heads on pages 127 and 260.

Sero-sanguineous Discharge.—A watery discharge mixed or tinged with blood is particularly suggestive of malignant disease. It is seen typically in carcinoma of the corpus, especially in that form of the disease in which exuberant fungation of the endometrium is present. The amount of blood in the discharge varies from a mere tinge to a bright red in different cases (see pp. 55, 58, and 59).

With carcinoma of the cervix, again, the discharge may be largely watery, though more commonly it is pure blood or blood mixed with pus and mucus (see p. 247).

A sero-sanguineous discharge also sometimes occurs with certain thickened but not malignant states of the endometrium, and often then in association with mucous polypi. The blood is scanty, however, usually amounting to a slight tinging only.

A similar phenomena is sometimes seen with uterine myomata. It must not be forgotten that the pregnant uterus may originate a watery discharge mixed with blood, notably in the case of the vesicular moles. In some of these cases vesicles may be passed.

Carcinoma of the uterine tube—a rare event (see p. 186)—has in a large number of recorded cases been associated with a blood-stained watery discharge due to the formation of an intermitting hydro-hæmato-salpinx.

Bloody Discharge.—The subject of abnormal hæmorrhage from the female genital tract is dealt with on page 48.

Purulent Discharge.—A discharge of pure pus issuing from the vagina may be due to one of several conditions.

Of these the commonest is vaginitis, though in so far as it is often complicated by cervicitis, the discharge is frequently not purulent but muco-purulent. The slighter degrees of vaginitis are not accompanied by the formation of pus, but merely by an excess of the normal milk-white secretion. As the inflammatory process becomes acute an increasing number of leucocytes are found in the discharge, until presently pus cells make their appearance (see p. 258).

The pus may be yellow or green in colour, in the latter case due to the presence of b. pyocyaneus.

A purulent discharge from the vagina may originate in the uterus. This is especially the case in inflammation of the senile uterus, because in the atrophied organ of old age the mucus-forming glands of the cervix

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have largely or entirely disappeared, and hence there is no admixture of mucus with the pus. The discharge in these cases may be either sero-purulent or frank pus and is often foul-smelling (see p. 198). A leaking pyometra may be present (see p. 150).

Pus may be formed in the uterus as the result of acute infection of its cavity. This is most often due to infection after miscarriage or labour, but may be due to infected growths such as myomata or carcinomata, or to the upward extension of acute vaginitis, gonococcal or otherwise.

A suppurating tube may empty into the uterus and give rise to a purulent discharge often intermittent in character (intermitting pyosalpinx).

Purulent collections in the pelvic peritoneal cavity may empty through the vagina. Thus a pyosalpinx or a suppurating ovarian cyst sometimes points through the posterior fornix, and, less commonly, the abscess due to an inflamed vermiform appendix.

Abscesses in the cellular tissue usually open into the vagina whether they are situated laterally or in the vesico-vaginal or recto-vaginal septum.

Abscesses originating in the rectal or peri-rectal tissues may also open into the vagina. Thus an ischio-rectal abscess or an abscess secondary to carcinoma of the bowel may open there.

The suppurating sac of a pelvic hæmatocele or sequestered extra-uterine gestation may discharge through the passage.

Finally, the presence of a foreign body in the vagina, usually a neglected pessary, is a common cause of purulent discharge.

Puro-sanguineous Discharge.—In any of the above-mentioned conditions blood or traces of blood may be mixed with the pus, but a puro-sanguineous discharge is especially suggestive of carcinoma either beginning in the body or neck of the uterus or in the vagina.

In this connection it may be recalled that since senile endometritis is the usual forerunner of carcinoma of the corpus, a purulent discharge may precede for a long time the appearance of the blood-staining which draws suspicion to the condition (see pp. 55 and 198).

Offensive Discharges.—Many discharges from the vagina are more or less offensive. It is noteworthy that women sometimes seek advice complaining of the odour of a discharge where no objectionable smell can be detected. In these cases the complaint is psychical. It is, however, none the less distressing to the patient, whose impression that she is offensive to other persons may be so strong as to cause her to abstain from society and become profoundly depressed.

Any one accustomed to examine women will have noticed that in the aged there is a tendency for the odour of the normal genital discharges to be offensive. This is probably due to the atrophy of the mucous glands of the cervix, for it is undoubted that mucus markedly inhibits the

growth of odour-forming bacteria. Thus in ozænic rhinitis and some forms of purulent bronchitis the horrible smell is accompanied by a discharge in which mucus is largely or altogether absent.

The most horribly fœtid discharges are associated with advanced carcinoma, especially of the cervix. The odour is peculiar and distinctive (see pp. 57, 59, 71, and 247).

Most offensive discharge accompanies a sloughing myoma or any other gangrenous mass in process of extrusion from the uterus. The odour differs from that of carcinoma, however.

Abscesses connected with the bowel and many collections of pus discharging by the vagina have the typical smell associated with b. coli infection.

The discharge due to vaginitis may be offensive. Particularly is this the case in old-standing gonococcal infection. The odour in these cases is due to secondary infection by diphtheroid and other bacilli, and not to the gonococcus.

The discharge due to senile endometritis is often very fœtid. The odour, however, is urinous and unlike that associated with carcinoma or breaking-down intra-uterine growths. The absence by atrophy of the normal glandular secretion is probably the predisposing cause of the evil smell as already pointed out.

A neglected pessary or other foreign body in the vagina may cause a very offensive discharge.

Finally, retained gestational products, when necrotic, may produce a discharge having a very evil odour.

ABDOMINO-PELVIC PAIN.

The subject of pain in connection with the female generative organs is a very wide one, for not only is such pain commonly associated with gross evidence of disease or abnormality of these parts, but also it is frequently complained of when no such conditions can be definitely made out.

For purposes of discussion, therefore, we may conveniently consider abdomino-pelvic pain under two main heads : —

1. Pain in association with gross evidence of pelvic disease or abnormality.
2. Pain without physical signs of pelvic disease or abnormality

PAIN IN ASSOCIATION WITH GROSS EVIDENCE OF PELVIC DISEASE OR ABNORMALITY.

Abdomino-pelvic Pain associated with Signs of Inflammation.— Pain, the result of inflammation, has this important characteristic, namely,

it precedes the appearance of the inflammatory tumour. As a rule it has a sudden onset coincident with which a sharp rise of temperature occurs. It is a continuous pain with exacerbations from time to time. The commonest causes of such pain are salpingitis, appendicitis, metritis, cellulitis, and inflammation supervening on a neoplasm previously existent. In all of these, with the exceptions of metritis and cellulitis, the pain is principally due to involvement of the peritoneum in the inflammatory process—pelvic peritonitis.

In general it may be said that the pain due to peritonitis is typical, associated as it usually is with great tenderness, rigidity and immobility of the lower abdomen, flatulent distension, and vomiting.

The pain of acute salpingitis is severe and situated in one or both sides of the lower abdomen. At times it is sudden in onset and agonizing in intensity. The physical signs of the condition rapidly appear (see p. 172), and there is great tenderness and rigidity over the affected area.

The pain of chronic salpingitis is dull and aching in character, but often increased at the time of the period into a degree of acute intensity. Such exacerbations are very characteristic of chronic pyosalpinx.

The pain of oophoritis is identical with that of salpingitis ; inflammation of the ovary, in fact, being commonly secondary to or associated with inflammation of the tube.

There is a rare variety of ovarian inflammation—the solitary follicular abscess, which, when it ruptures into the peritoneal cavity, produces pain so violent and sudden as to simulate perforation of a viscus or rupture of a tubal gestation.

The pain due to inflammation supervening on a previously existent pelvic neoplasm, such as a uterine myoma or ovarian cyst, varies in its severity according to the character of the infection and the nature of the processes leading up to the inflammatory attack. Thus the most acute peritonitis may be present or mere local tenderness and aching over the tumour. If the inflammatory condition follows some previous accident to the tumour, such as torsion of its pedicle or rupture, the pain typical of inflammation is preceded by that caused by the torsion or rupture (see pp. 69, 70, and 183).

Peritonitic pain referred to the abdomino-pelvic region is not infrequently due to appendicitis—a point most important to bear in mind and concerning which the reader is referred to the section dealing with the " Acute Abdomen " (see p. 77).

Endometritis only gives rise to abdominal pain when the process is acute, as in gonorrhœal or streptococcal infection. The pain is due to the swelling and infiltration of the uterine wall and may be severe enough to mimic peritonitis, which, however, is not present unless the uterine tubes are simultaneously affected. It is complained of in the lower

abdomen in the middle line, and radiates down the vagina (see pp. 48 and 57).

The distinction of pain due to endometritis from that caused by salpingitis is often difficult and depends upon the absence, on vaginal examination, of obvious tenderness and swelling in the region of the uterine tubes. The uterus itself is exquisitely tender and abdominal rigidity is usually present, but distension is absent.

Abdominal pain due to cellulitis is referred to one side, low down, and just above the groin. From thence it radiates down the medial side of the thigh and through to the buttock. It is of a throbbing character, especially if an abscess is in course of formation. The physical signs of cellulitis accompany the pain (see pp. 170, 237, and 239).

Abdomino-pelvic Pain associated with Signs of Acute Intraperitoneal Hæmorrhage.— Under this head falls the pain due to ruptured extra-uterine gestation and also certain other rarer causes of rapid extravasation of blood into the pelvis.

The subject of extra-uterine gestation is further dealt with on pages 136, 153, 167, 185, 210, and 227, to which the reader should refer. As far as the pain alone is concerned, it may here be pointed out how very variable this is both in severity and type, a fact due to the different courses which extra-uterine gestation may take.

In the most acute cases the pain is sudden and agonizing, and associated with great faintness or even loss of consciousness. It is, as a rule, first referred to the lower abdomen, and not infrequently to the side on which the disaster has taken place. Later on, however, as the effused blood distributes itself over the peritoneal cavity, the pain becomes more generalized or may even be most complained of in a situation remote from the original focus, e.g. the epigastrium.

Pain of this sudden and severe type is seen with various other forms of abdominal catastrophe, such as perforation of a viscus, mesenteric torsion, or embolism and other conditions discussed on page 77. The distinction of acute rupture of an extra-uterine pregnancy from these conditions is there fully considered.

In the less acute types of ruptured extra-uterine gestation the pain, though sudden in onset, is less severe and more localized to the seat of the mischief. It frequently assumes an intermittent character—severe spasms of pain being succeeded by periods of comparative quiescence, each seizure marking a recrudescence of the hæmorrhage from the uterine tube.

It is noteworthy that the pain and tenderness due to blood effused into the peritoneum is even greater than that due to infective peritonitis. The extreme tenderness of an hæmatocele, as felt from the vagina, will be presently referred to (see p. 136).

Abdomino-pelvic Pain associated with Signs of a New Growth.— Pelvic neoplasms do not, as a rule, give rise to abdominal pain or tenderness until they have existed for some considerable time, and then chiefly because some accidental occurrence has befallen them.

Thus uterine myomata and ovarian cysts are in their earlier phases singularly painless, insensitive tumours.

As regards myomata, most of the degenerative processes to which they are liable give rise to pain, while the rare accidents of torsion or inflammation are similarly associated. Impaction of the tumour in the pelvis or extreme size may give rise to pain due to pressure, while the process of extrusion is accompanied by sharp colic due to uterine contraction (see pp. 181, 252).

Ovarian cysts may produce pain either by torsion of the pedicle, inflammation, rupture, or impaction.

The pain of torsion first tends to be colicky, because rotation of the cyst is effected by successive movements, each of which is accompanied by spasms of pain. The pain due to inflammation of a cyst is referable to the peritonitis set up around it and the tension in the cyst wall. It is, however, worth noting that conversion of the whole cyst contents into very fœtid pus may sometimes occur without any undue pain or tenderness being noted. These cases are very puzzling, because it seems unlikely that the marked fever and signs of septic intoxication which are present are due to an apparently uninflamed tumour.

Rupture of an ovarian cyst may occur under various circumstances, and the pain evoked will depend upon their nature. Thus thin-walled, follicular cysts containing clear fluid may spontaneously give way, or be ruptured during an examination. The fluid being innocuous, no symptoms may be produced ; on the other hand, acute rupture may follow suppuration of a cyst, in which case violent shock and severe generalized pain due to peritonitis will follow. Occasionally torsion of the pedicle may produce an effusion of blood into the cyst cavity so great that the wall ruptures and the blood extravasates into the peritoneal cavity. Pain in these cases is severe, being at first that characteristic of torsion, and later, that due to hæmo-peritoneum. The patient presents symptoms of internal hæmorrhage as well.

The commonest types of rupture, however, are those that affect the multilocular pseudo-mucinous cysts and the papilliferous cysts. In these cases the giving way of the cyst wall is followed by extravasation of the colloidal contents in the one case, and by multiple transplantations of the warty growths in the other. In either the process is subacute. The previously painless cyst becomes less distinct, while general abdominal distension is observed with rigidity and tenderness suggestive of a low grade of peritonitis.

Pain due to impaction in the pelvis is less commonly seen with an ovarian cyst than with a myoma, because the tumour being fluid is more adaptable.

Solid ovarian tumours, if innocent (fibromata, adenomata), are only associated with pain if inflamed or twisted.   Malignant ovarian growths, however, soon set up peritonitis in their neighbourhood, and may, from an early stage, be both painful and tender (see pp. 158, 160).

Malignant disease of the uterus gives rise to pain in its later phases. Carcinoma of the corpus may cause pain by the intra-uterine tension due to the growth alone, though this is not constant.   Later on, when the neoplasm perforates the muscular wall, signs of subacute peritonitis are manifest, with fixity of the organ and much tenderness and pain.

Carcinoma of the cervix does not cause abdominal pain until late. It is then due either to salpingitis secondary to the infected breaking-down growth, or to massive infiltration of the parametric and para-vaginal tissues, in which case a large fixed mass resembling that due to cellulitis may be present (see p. 247).

The rarer forms of malignant disease of the uterus (sarcoma, chorio-carcinoma) give rise to abdominal pain earlier, because the growth rapidly affects the peritoneum, forming secondary masses there and setting up a subacute peritonitis.

Malignant disease of the uterine tube forms a mass difficult to distinguish from chronic salpingitis, but pain and tenderness are later in appearance, being delayed, as a rule, till the growth has passed beyond the confines of the tube and invaded the peritoneum.

In general it may be said that the pain due to malignant disease is much less acute in onset and less severe than is the case with inflammatory affections.   The former condition may therefore be suspected when, with a large fixed mass, the sufferings of the patient are relatively slight.

New growths of the vagina are not as a rule associated with pain. Thus vaginal myomata, fibromata, and cysts are insensitive tumours, unless complicated by inflammation.   Malignant disease of that canal is also painless in its earlier phases (see p. 264).

As regards the vulva, a urethral caruncle is often exquisitely sensitive to touch and associated with much burning and smarting pain, but, on the other hand, it sometimes exists in the absence of any such symptoms.

The fissures accompanying advanced leukoplakia (see p. 274) are very painful.

Cysts of the vulvo-vaginal gland, if not inflamed, give rise more to discomfort than pain, while carcinoma of the vulva, though painful in its later stages, is at first merely associated with soreness or itching (see pp. 278, 280).

Abdomino-pelvic Pain associated with Signs of Displacement or of Deformity.—The pain due to displacement of the genital canal varies according to its nature and degree.   It may here be pointed out that pain due to sustentacular relaxation is of two kinds.   The first, which may be called the " pain of primary yielding," is due to the stretched condition of the support or supports originally at fault.   The second, which may be termed the " pain of function transference," is due to the extra burden thrown on the remaining supporting structures by the default of those first giving way.

The mechanism of the displacements of the genital canal and the treatment appropriate to them is considered fully on page 346, to which the reader is referred.

The extent to which these displacements give rise to pain varies in different cases, and, on the whole, it may be stated that the lesser degrees produce more symptoms than the greater.   This apparent paradox can thus be explained.

The pain which accompanies a yielding support is due to the stretching force applied to the support.   When the support has entirely given way, its sustentacular function is usually taken over by some neighbouring structure, tension which is not productive of pain.

As a common example, the case of flatfoot may be cited, the earlier phases of which are associated with much pain, but when the arch has entirely disappeared, the deformity, though unsightly, no longer causes distress.   It is so with displacements of the genital canal.

In retroversion, the earliest pain to appear is that due to the yielding of the broad ligaments, and radiates outwards parallel to the inguinal ligament on either side.   Later on, a degree of backache is felt owing to the cervix tilting forwards and exercising unnatural traction on the utero-sacral ligaments.

Downward descent of the vagina, accompanied or not by descent of the uterus, produces bearing-down pain and backache from the yielding of the supports of the vaginal vault and the pelvic floor.

As in many cases all the various forms of displacement are more or less combined (see p. 346), all these varieties of pain may be present together.   It is, however, noticeable that, when the deformity is extreme, pain may be slight or absent altogether.

Thus complete retroversion or still more complete procidentia is frequently met with unassociated with any complaint of backache, abdominal pain, or bearing-down sensations.

It is further noteworthy that all these pains being due to the effect of gravity, disappear when the patient lies down.   The one exception to this rule is in the case of early retroversion, in which, as one would expect, dorsal decubitus does not obviate the drag on the broad ligaments.

With this exception the disappearance of pain on lying down is so characteristic a feature of " gravity " displacements that, when the pain does not so disappear, the possibility of its not being due to causes other than the displacement becomes extremely likely.

THE DISTINCTION OF PAIN ARISING IN THE GENITAL ORGANS FROM THAT DUE TO OTHER ABDOMINAL CONDITIONS.

Abdominal pain due to disease of the uterus or its appendages may be mimicked by conditions which bear no relation to the generative organs.

FIG. 52.—THE INFLAMED APPENDIX ADHERENT TO THE RIGHT TUBE AND OVARY.

Conversely, the pain associated with pelvic disease may on occasions be referred to distant situations, and thus lead to a false diagnosis.

Finally, there are acute conditions variously affecting certain of the abdominal or pelvic viscera which are characterized by abdominal pain so diffuse that a general similitude is observed whatever the original source of the trouble.

We shall therefore proceed to consider the subject under three heads :—

I. **Painful Abdominal Conditions that may simulate Disease of the Generative Organs.**

Appendicitis.—Owing to the close anatomical relationship between the vermiform appendix and the right uterine appendage, pain arising in the former is often attributed to the latter, and *vice versa* (Fig. 52).

In general it may be said that the pain of acute appendicitis is felt higher up, and that on pelvic examination nothing is to be felt from the vagina, whereas in salpingitis or oophoritis a tender swelling is nearly always detectable.

When an inflamed vermiform process actually lies in the pelvis the distinction may be very difficult or impossible, for the inflamed mass may then be felt from the vagina (Fig. 53). Its position, however, as a rule is somewhat different to that occupied by the swelling due to salpingitis or oophoritis, being more posterior in the hollow of the sacrum and lying just to the right side of the rectum, from which it may be more easily felt than from the vagina.

In chronic appendicitis a very definite tumour may be formed which,

FIG. 53.—THE INFLAMED APPENDIX LYING IN THE PELVIS BEHIND THE UTERUS.

when adherent to the right broad ligament, may very closely simulate that due to appendage disease, whilst it is sufficiently hard to be mistaken for new growth arising either in the right ovary or the uterus itself. Further, it is to be remembered that cases are not infrequently met with in which appendicitis and salpingitis coexist, the right tube being infected from the vermiform process. Finally, pain due to slight appendicitis or appendicular adhesions may, short of an exploratory operation, be indistinguishable from that variety of pain which we have termed ilio-pelvic (see also p. 187).

Renal Pain.—The subject of renal pain is fully discussed on page 117. Its distinction from pain arising in the genital organs is easy as a rule.

Ptosis of the kidney by producing backache (sometimes markedly

worse at the periods), may suggest something amiss in the pelvis. The pain, however, is lumbar, not sacral.

Acute pyelitis may be accompanied by symptoms mimicking pelvic peritonitis, but the pain complained of is higher up than that due to inflammatory conditions of the pelvis, and is most of all likely to simulate appendicitis.

Vesical Pain.—Pain in the bladder is often secondary to disorders of the genital organs, *e.g.* salpingitis, impacted tumours, etc., so that before making a diagnosis of disease in this viscus a careful vaginal examination should be made (see p. 122).

Pain arising in the Gall Bladder.—The pain due to gall bladder disease is not, as a rule, likely to be confounded with pain due to genital disorders.

On rare occasions a distended gall bladder may reach downwards almost to the brim of the pelvis, and has been mistaken for an inflamed or twisted ovarian cyst.

Pain arising in the Spleen.—A movable spleen may lie at the pelvic brim or even within the pelvic cavity itself, and may then be mistaken for a tumour arising in the uterus or its appendages. Thus in one case in our experience a twisted movable spleen simulated torsion of a cyst of the right ovary, and in another the organ lying in the pelvis was mistaken for an impacted pelvic tumour.

Intestinal Pain.—Intestinal pain may simulate pain due to genital disorders. This is more likely to result if the affected segment of the bowel lies in the pelvis. Thus carcinoma of the rectum or pelvic colon gives rise to pelvic pain which may simulate very closely that due to diseased conditions of the uterus or its appendages. Such a mistake is the more likely because the physical signs are often very similar (see pp. 209 and 231).

The pain due to carcinoma of the lower bowel may be due either to obstruction of the bowel lumen, to extension of the growth to the peritoneum, to infiltration of the retro-peritoneal tissue, or to perforation of the intestinal wall.

Obstruction of the pelvic colon or rectum is sometimes caused by the pressure of uterine or ovarian tumours. Pelvic peritonitis set up by extension of malignant disease from the bowel produces symptoms similar to that set up by various chronic inflammatory or neoplastic states of the uterus or ovaries. Malignant cellulitis, secondary to rectal carcinoma, may very closely mimic posterior pelvic cellulitis due to cervical or vaginal infection. Finally, perforation of the bowel above a carcinomatous stricture produces acute peritonitis beginning in the pelvis.

Much attention has been devoted to the symptoms due to intestinal stasis. This condition, first described by Arbuthnot Lane, is

associated with the formation of certain adventitious peritoneal bands or membranes which tether the bowel in some parts of its course, and prevent the free passage of the intestinal contents. Whether these adhesions are secondary or primary to the abnormal condition of the bowel is still under debate, but such structures presumably are capable of giving rise to local pain liable to be mistaken for pain arising in the genital organs.

There are three situations in which these may arise :—

1. Bands passing from the cæcum or appendix to the right pelvic brim.

2. A band tethering the terminal portion of the ileum to the posterior pelvic wall ("Lane's ileal kink").

3. A band shortening the mesentery of the pelvic colon, so that the bowel is brought into close relation or even fusion with the left ovario-pelvic ligament.

It might be thought that the presence of these bands was the explanation of all those cases of obscure abdomino-pelvic pain presently to be described which we have called right ilio-pelvic and left ilio-pelvic respectively (see p. 83).

Unfortunately this is not so in our experience, for, having operated as a last resort on such patients with special reference to the finding of such adhesions, we have frequently searched for them in vain. In a proportion of cases, however, these bands would appear definitely to be the source of the symptoms, and the question of the existence of intestinal stasis must therefore be closely considered by the practitioner when dealing with one of these troublesome cases.

In making a diagnosis the administration of a *bismuth meal* is important, for by its means the existence of such tethering bands may be revealed by the observation of definite delay in the passage of the intestinal contents or actual kinking of the bowel.

The pain due to colitis, either of the mucous or ulcerative variety, is frequently attributed to some lesion of the uterus or its appendages. It particularly simulates that variety of obscure abdomino-pelvic pain to which we have applied the term left ilio-pelvic. A pain that is not colicky, or at all events not markedly intermittent, is unlikely to be due to colitis.

II. **Genital Pain simulating Disease of other of the Abdominal Viscera.**—Pain arising in the genital organs may be referred to parts more or less distant from the pelvis.

The most striking example of this is met with in the case of certain acute conditions affecting the ovary or tube. Thus in the more fulminant types of ruptured extra-uterine gestation, and in such disasters as the sudden bursting of a solitary follicular abscess of the ovary, the pain is

often referred over the whole abdomen generally, or may centre round the umbilicus or even the epigastric region.

Such misleading symptoms may render diagnosis very difficult in the absence of a definite lesion being found on pelvic examination, and it is for this reason that many of these cases are mistaken for perforated gastric or duodenal ulcers, acute intestinal obstruction, or perforative appendicitis.

Pain arising in the right uterine tube may exactly simulate pain of appendicular origin. This is particularly the case when salpingitis occurs soon after delivery, because the tube then occupies an unusually high position.

There is a congenital deformity in which the uterine tube and ovary have been arrested in their descent to the pelvis and lie along or above the brim of the pelvis. We have on two occasions met with pyosalpinx in these circumstances, and in one case in which the inflammatory process was limited to the right side appendicitis was exactly simulated. The ovary in these cases is of the elongated fœtal type.

The pain of torsion of an ovarian cyst or a pedunculated myoma when the tumour has a long pedicle is located so high above the pelvis that, together with the unusual situation of the tumour, diagnosis of some acute renal condition or gall bladder is very apt to be made.

III. Diffuse Abdominal Pain ("the Acute Abdomen").— Finally, we come to a discussion of those acute conditions, some arising in the pelvis and some higher up in the abdomen, in which the leading feature is generalized abdominal pain from the outset, without marked localizing signs or symptoms, and to which the term "acute abdomen" is collectively applied.

In all of them the predominant symptoms are due to acute irritation of the peritoneum either by extravasated blood (ruptured ectopic gestation, bleeding from an ovarian follicle, ruptured aneurysm, or the area of infarction after mesenteric thrombosis), escaped intestinal contents (perforated gastric or intestinal ulcers), escaped bile (perforation of the gall bladder), the diffusion of pus (leaking pyosalpinx, rupture of an ovarian or tubal abscess, or of a pyo-appendix), or the transudation of intestinal bacteria and toxins (strangulated hernia, torsion of an ovarian cyst, acute pancreatitis).

The general features of such cases may be briefly described as follows : the patient, previously in relatively good health, is suddenly, and apparently causelessly, seized with severe abdominal pain, sometimes localized at the outset, but quite as often felt generally all over the abdomen from the first.

With the pain there may be faintness, collapse, or even partial insensibility ; nausea or vomiting is common.

The abdomen is very tender and at first is retracted and rigid, but within a short time tumidity is observed which passes into excessive distension. The pulse may be rapid from the outset, but not infrequently when shock is very marked *it may be slow at first.* Unless this is realized there is a danger of disastrously underestimating the gravity of the case. The temperature is subnormal to begin with, but later on commonly rises. The subsequent progress of the case varies according to the nature and extent of the disaster. The symptoms may rapidly become worse, and death occur in a few hours, or a period of reaction may ensue during which a false impression of improvement may be given. In the latter event, it is particularly to be noted that, in spite of the seeming amelioration, the pulse remains suspiciously abnormal in rate and unsatisfactory in character.

The practitioner endeavouring to determine the site of the lesion causing the symptoms and signs of " acute abdomen " should direct his attention to the following points :—

(1) Is there anything suggestive in the past history of the patient ?
(2) Where was the pain first felt ?
(3) Are symptoms indicative of internal hæmorrhage present or not ?
(4) Are any localizing signs discoverable ?

THE HISTORY.—This may shed some light on the origin of the condition. Thus in most cases of ectopic gestation the last period has been missed, or at least has been different in quantity and duration from those that preceded it.

In appendicitis there is often a history of previous attacks of pain in the right abdomen or chronic indigestion.

In gastric and duodenal ulcers " indigestion " may have been complained of for some time before. With gastric ulcers there is often a history of vomiting after food and perhaps of hæmatemesis, while the " indigestion pain " has been noticed to occur immediately after a meal.

With duodenal ulcers, on the other hand, vomiting is less common, the " indigestion " is of the " acid " type, and the pain is not felt for some hour or two after a meal. This " hunger pain " is very characteristic of duodenal ulceration and is relieved by taking food. There may be a history of blood having been passed from the bowel.

Cases of acute suppuration of the gall bladder due to calculi usually give a long previous history of indefinite pain in that region attributed as a rule to indigestion.

POSITION IN WHICH THE PAIN WAS FIRST FELT.—In some cases of " acute abdomen " the pain is first felt by the patient over the organ in which the condition originates, and it rapidly becomes generalized. In other cases it is referred to a point remote from the disaster. Thus

the pain of a ruptured uterine tube may be first felt in the epigastric region ; of appendicitis in the left iliac fossa !

In many instances, however, the site of the pain is indefinite to the sufferer from the outset.

THE PRESENCE OR ABSENCE OF SYMPTOMS OF INTERNAL HÆMORRHAGE.—This is a most important point, for if unequivocal symptoms of hæmorrhage are present the diagnosis lies between a ruptured ectopic gestation, hæmorrhage from an ovarian follicle or blood-cyst, mesenteric thrombosis, torsion of an ovarian cyst with intra-cystic hæmorrhage, or leaking abdominal aneurysm.

Of these disasters rupture of an extra-uterine gestation is much the commonest.

All the other conditions producing an " acute abdomen " give rise more or less to symptoms of shock and not of internal hæmorrhage.

The likeness between the symptoms of internal hæmorrhage and the symptoms of shock is close, but there are certain points which enable a distinction to be made. A knowledge of these points is of such prime importance that we will set them forth in detail.

General Appearance.—In hæmorrhage the patient is *blanched.* The mucous membranes and conjunctivæ are exsanguine, on squeezing the fingers little or no blood can be pressed into the finger-tips, and the superficial veins of the arm and back of the hands are almost or quite invisible.

In shock the patient is very pale, but mucous membranes and conjunctivæ are not whitened in proportion ; the lips are often somewhat cyanotic. By squeezing the hand a blush can be produced in the finger-tips, and the superficial veins of the arms and hands are often markedly apparent.

The Pulse.—In hæmorrhage the pulse-rate is very fast, as a rule, though on rare occasions it may be slow. It is always very small, and the cord of the artery cannot be felt between the beats.

In shock the pulse-rate is as often slow as fast. It is very feeble in force, but the cord of the artery can often be plainly distinguished between the beats, indicating that there is no want of blood in the vessel.

The Respiration.—In hæmorrhage the breathing is distressed and gasping. In shock it is shallow, quick, and quiet.

The Temperature.—In hæmorrhage the temperature is always at first subnormal. In shock it may be raised.

Progress of the Case.—In hæmorrhage the symptoms described tend to become steadily worse as the hours elapse.

In many of the conditions causing shock, however, and notably in perforation of a gastric or duodenal ulcer, a change in the character of the symptoms presently occurs, the shock due to the sudden disaster giving place to symptoms of inflammatory reaction in the peritoneum

with fever, flushed face, and a fuller pulse. Between these two phases there may intervene a deceptive period during which the patient may appear so little distressed that the practitioner may change his mind and consider that after all no serious catastrophe has befallen his patient. He will find, however, that in spite of the apparent improvement the pulse remains very unsatisfactory and that although the patient may not appear to be in pain, yet on examining the abdomen an ominous rigidity of the parietes is present.

LOCALIZING SIGNS.—In most cases of " acute abdomen " some localizing signs will be found if carefully searched for. It is to be remembered, that in most of the acute pelvic catastrophes no swelling is to be felt but merely exquisite tenderness. This particularly applies to fulminant rupture of an early tubal gestation, acute leaking suppurative salpingitis and fulminant pelvic appendicitis. When the site of the disaster is situated in the internal generative organs, vaginal examination will reveal great tenderness of the posterior vaginal vault, even if no definite swelling can be felt. If the uterus be " rocked," acute pain is at once produced. If a tender swelling is able to be felt per vaginam, the trouble is certainly pelvic in origin, and the same may be said if, without any definite swelling, the site of *maximum peritoneal tenderness* is thus situated.

In ruptured extra-uterine gestation there is nearly always a certain amount of bloody discharge from the uterus.

In appendicitis the point of maximum tenderness and resistance is usually situated over the region of the vermiform process, so that if this be lying in the iliac fossa the most pain will be felt there. When the process is retro-cæcal (Fig. 54) the tenderness is most marked higher up, whilst if it lies in the pelvis the area of maximum tenderness is more centrally situated, and on rectal or vaginal examination an exquisitely tender swelling may be felt high up in the hollow of the sacrum and to the right side.

In perforation of a gastric or duodenal ulcer the tenderness and resistance are at first most marked in the epigastric region, but later on as the gastric or duodenal contents become diffused it may be more marked below the umbilicus or even towards the pelvis.

In ruptured duodenal ulcers the tenderness is nearly always more marked down the right side of the abdomen, and for this reason may be mistaken for that due to retro-cæcal appendicitis.

Owing to the close relationship borne by the appendix to the right uterine tube, distinction between appendicitis and some acute lesion of the tube may be very difficult or impossible before the abdomen is opened.

Acute cholecystitis with gangrene or perforation of the gall bladder

usually produces maximum tenderness in the right hypochondriac and the lumbar regions. Sometimes the swollen gall bladder may be felt.

In general it may be said that if with the symptoms of " acute abdomen " a definite swelling can be felt, that swelling has pre-existed the onset of the acute symptoms, because the disasters capable of causing such symptoms do not themselves produce a tumour in so short a time.

Thus if a definite swelling is felt in the pelvis from the outset, the probability is that the case is either one of rupture of a well-advanced extra-uterine gestation or torsion, or acute infection of some pre-existent neoplasm, probably an ovarian cyst.

Similarly, if in the appendix region a definite tumour is felt, old appendicitis has probably preceded the acute attack ; while if the gall bladder is plainly felt, the probability is that acute cholecystitis has supervened as a result of pre-existent biliary calculi.

Finally, when a definite tumour can be felt or a definite dull area can be percussed

Fig. 54.—Gangrenous Appendix lying behind the Cæcum.

extending from the pelvic brim upwards in the middle line, the probability is that the case is one of acute torsion or an ovarian cyst.

ABDOMINAL PAIN WITHOUT PHYSICAL SIGNS OF PELVIC DISEASE OR ABNORMALITY.

Patients complaining of pelvic pain, in whom careful examination fails to find physical signs capable of explaining the symptoms. represent

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one of the most difficult classes of case with which the practitioner has to deal.

In general it will be agreed that women exhibit greater fortitude towards those varieties of pain that afflict either sex than do men. Thus it will be found, on the whole, that they bear more patiently such pains as those engendered by pleurisy, peritonitis, a broken limb, or an inflamed tooth than do the stronger, but undoubtedly more irritable, sex.

The pains peculiar to the abdomino-pelvic region of women, how-ever, not only have no parallel in men, but cannot even be compared with those affecting other parts of the female body. In their transient and protean characters, in the absence of any physical changes capable of explaining them, and in their indefiniteness to the patient herself, they stand apart. Elucidation is further made difficult by the lack of accuracy and consecutively ordered statement which characterizes these patients, and which arises apparently from a want of any clear-cut con-ception of their own sufferings. The tendency to illogical exaggeration naturally pertaining to the sex is unduly developed in these women, and leads to the use of language when describing their symptoms widely out of proportion to the actual facts.

It is not suggested that these women do not suffer pain, but that in many instances it is a pain-sense differing entirely from the ordinary, and capable of being borne over long periods of time without that destructive effect to the general health and nutrition that pain in its usual forms so rapidly produces.

An attempt to classify the various forms of abdomino-pelvic pain that occur in the absence of physical signs of disease is impossible, but it is feasible to distinguish some of the more commonly occurring types.

First, it must be remembered that the expression " absence of physical signs " does not necessarily mean that organic changes are absent, but merely that by ordinary methods of examination none can be detected. One need scarcely repeat how comparatively limited is the scope of such methods, even at the hands of the expert. Nothing teaches this so much as habitual opportunity of inspecting the pelvic organs through an abdominal wound—one then learns that many of the slighter physical changes in the pelvis are absolutely undetectable by vaginal examination. Thus adhesions, unless they be massive or exist in the form of tense strings or bands, cannot be felt. This is particularly true of what may be called " postage-stamp " adhesions, i.e. simple surface-to-surface union, without thickening or induration. With such, it is possible for the uterus to be universally adherent to bowel, bladder, and omentum and yet for the practitioner to be unable to detect it by vaginal examination. Slight degrees of tubal distension, provided that the tissues are soft, may pass unnoticed. Fluid pelvic effusions, also, are not palpable,

unless under pressure, *i.e.* tense, or associated with thickening of the parts around. If abdominal section be performed soon after the monthly period a certain quantity of blood-stained fluid is found in the pelvis, a fact that will be referred to later. The quantity at times may amount to several ounces, but it is impossible to detect the fluid by ordinary examination.

We will now proceed to discuss in turn several types of pelvic pain which commonly present no definite physical signs to aid one in making a diagnosis of their cause.

LEFT ILIO-PELVIC PAIN.—Of all varieties this is the commonest. The pain is complained of in an area centring round a tender point on the abdominal wall that corresponds to the spot where the sigmoid meso-colon crosses the brim of the pelvis. At this point it comes into very close relationship with the left ovario-pelvic ligament, the ligament in many cases appearing to pass into the base of the meso-colon. The pain is nearly always continuous, though it is normally abated by rest in the supine posture. It may radiate down the left groin and front of the thigh. On vaginal examination there is often tenderness in the left fornix, but nothing definite can be found there. It is usually accentuated at the menstrual epoch, and on occasions when the bowels are constipated.

This type of pain is commonly called " ovarian," and is often attributed to that all-but-mythical disease " ovaritis." Examination, however, yields no evidence of such a condition. Primary " oophoritis " or " ovaritis " is extremely rare. Inflammation of the ovary is nearly always secondary to salpingitis, but salpingo-oophoritis in most cases produces a palpable tumour. In some cases an old deep cervical laceration is present on the left side, which is tender to the touch and lends colour to the idea that some cellulitic band extends upwards to the brim of the pelvis and is the origin of the pain. But this tenderness in the left fornix is present in cases in which no cervical laceration exists, nor have we personally ever found definite evidence of such a cellulitic band.

Constipation is evidently not the entire cause of the pain, for one cannot cure it by any amount of purging, though regular action of the bowel undoubtedly mitigates it as a rule.

Some of these patients present an unduly movable right kidney, and it has been held by certain authorities that this condition may cause pain referred to the left side. The evidence is, however, not at all convincing, and we personally have never met with a case in which it was at all likely.

It is suggested sometimes that the pain is due to adhesions between the sigmoid colon and the left broad ligament (see p. 76). When one considers the frequency with which profound adhesions exist in the peritoneal

cavity without causing any discomfort, it is difficult to believe that adhesions, even though present, are often the cause of the pain. Moreover, in those cases in which the abdomen is finally opened to discover the origin of the symptoms, no such adhesions are found to be present as a rule.

The pain is, perhaps, most frequently attributed to "ovarian neuralgia." That its seat is the ovary is a pure assumption, but in some respects this hypothesis is better supported than those we have already dealt with. On the other hand, similar pain may be complained of after removal of the left appendage, either for the symptoms under discussion or for some other condition. A more likely seat for the pain is, we think, the left ovario-pelvic ligament. In this fold run the ovarian vessels and certain of the sympathetic nerves going to the ovary. These nerves, as they pass in the ligament, might very well be affected by the sigmoid colon pulling unduly on its mesentery, which, as already described, bears a very close relation to the ovario-pelvic ligament. The amelioration that the pain undergoes with rest in the supine posture and the intensification which flatulence or constipation produces are in favour of this view, as is the fact that removal of the ovary has frequently failed to cure it.

Since the condition known as "mucous colitis" has become fashionable a good many of these cases of left ilio-pelvic pain have been thus labelled, on the score of the passage of an occasional mucous stool. Nothing is known about mucous colitis, even if the term be limited to those cases in which attacks of profuse mucous diarrhœa periodically occur. But the term is also applied to those far more common cases in which chronic ilio-pelvic pain is complained of with *constipation* ! Constipation is incompatible with inflammation of the colic mucosa, and such a diagnosis is mere *camouflage* serving to conceal absolute ignorance of the cause of the pain.

In all left-sided pain it is essential that the possibility of a calculus in the left ureter or kidney should be first excluded.

RIGHT ILIO-PELVIC PAIN.—In the next type to be discussed the pain is situated on the right side, but at a point lower down than that which characterizes left ilio-pelvic pain. The point of maximum tenderness and pain is usually situated about 1 inch above the middle of the inguinal ligament. Thence it radiates inwards, parallel with the ligament. It is less common than left ilio-pelvic pain, and, like it, it is frequently attributed to "ovaritis" or "ovarian neuralgia." From the close proximity of the appendix it is often believed to be due to chronic appendicitis or adhesions, the result of appendicitis. In a typical case, however, it differs in its lower position, its constancy over long periods of time, and in the absence of any of the other signs of that disorder. Adhesions

around the vermiform process and cæcum may give rise to pain, but it is a pain variable in its presence and especially excited when the cæcum is flatulently distended or in active contraction (see also p. 76).

Flatulent distension of the cæcum is most marked in the early morning after waking, and persons with appendicular adhesions frequently complain of pain at this time. As regards peristalsis, the ingestion of food into the stomach soon excites contraction in the large intestine, not as a wave passing through the length of the small intestine, but starting *de novo* in the large bowel. It is for this reason that the pains of chronic appendicitis are so frequently mistaken for those due to indigestion. It is of interest to remember in this connection, that, in certain of the lower forms of animal life, *e.g.* the flea and some other insects, expulsion of the contents of the lower intestine occurs simultaneously with ingestion of food. Right ilio-pelvic pain, unlike that due to appendicular adhesions, bears no relation to food, and is generally better after rest. If the patient presents an unduly movable right kidney as well, this is often held to be the cause of the pain. The pain truly characteristic of a " movable " kidney is, however, located higher up, radiates downwards and backwards, and is entirely relieved by recumbency (see p. 117).

The cause of right ilio-pelvic pain is even more difficult to assign than that of left ilio-pelvic pain. The hypothesis of ovarian neuralgia is often made, as on the left side, but traction on the right ovario-pelvic ligament from anatomical reasons is less likely. In one very marked case in which one of us opened the abdomen, enormous thickening of the ovarian vein on that side, the result of old-standing phlebitis, was found. It is possible that such a condition might from time to time be found in these cases.

In examining these obscure cases of abdomino-pelvic pain there are certain questions a reliable answer to which is of the greatest importance. They are :—

    1. Is the pain relieved on lying down ?
    2. Does it bear a definite relation to the menstrual epoch ?
    3. Is it influenced by the condition of the bowels ?
    4. Does it bear a relation to the taking of food ?
    5. What period of the day is it most marked ?

1. A pain that is relieved by recumbency bears some relation to the force of gravity.

2. If fluctuations of pain are related to those of the menstrual loss, some connection with the genital organs is suggested.

3 and 4. The importance of the questions bearing on the relation borne to food intake and fæcal evacuation are obvious.

5. As regards the period of the day when the pain is at its worst, it is obvious that symptoms that are worst during the night or early morn-

ing are probably not due to muscular or ligamentary fatigue. On the other hand, pains that are worse at the end of the day's work probably bear some such relation.

Very careful physical examination should be undertaken both in the lying and standing postures. It is impossible properly to estimate gravity displacements such as retroversion, prolapse, " movable " kidney, and such like, except in the standing posture. The patient should be asked to indicate the point of greatest pain with her own hand.

If ordinary methods of examination do not reveal anything and the case is urgent for relief, investigation with X-rays is indicated, lest an abnormality of the spine or sacro-iliac joint exists, and in order to exclude the presence of renal, ureteric, or vesical calculi.

When the pain bears a definite relation to the action of the bowels or the intake of food, the study of the passage of a bismuth meal by means of X-rays may be helpful by revealing the occurrence of abnormal stasis in some section of the intestinal canal.

If the bladder be suspected, it should be investigated with the cystoscope, which can well be done without an anæsthetic, unless the patient is unduly nervous.

Finally, in obscure cases an examination under an anæsthetic should be sought.

VULVO-VAGINAL PAIN.

Pain in the vagina or vulva may arise from disease of these parts or may be referred from the genital canal higher up, or may be due to one of the obscure nervous affections grouped under the designation of neuralgia.

Pain due to Local Disease.—All inflammatory affections of the vulva or vagina may be more or less painful, especially those in which an abscess is formed.

Of these, inflammation of the vulvo-vaginal gland is the most common. The labia majora are a not uncommon site for furuncles, whilst herpes of the vulva is associated and often preceded by acute pain (see p. 273).

Inflammatory affections of the urethra, such as sub-meatal fissure (see p. 124) and sub-urethral abscess, are very painful, whilst urethral caruncle and diffuse carunculosis—both inflammatory conditions—may be productive of much suffering, though curiously enough they often exist without any discomfort.

A hypertrophied state of the labia minora is sometimes met with, the patient complaining of soreness and pain, especially when walking.

Much pain and soreness accompanies the disease known as kraurosis

vulvæ, whilst leukoplakic vulvitis in its later stages may be similarly associated.

Of the new growths causing pain, the commonest is a cyst of the vulvo-vaginal gland, whilst less frequently the source of the complaint is found to be a well-advanced carcinoma beginning either in the vulva or vagina (see pp. 278, 280, and 263).

Referred Pain.—Pain may be referred to the vagina or vulva from disease higher up. It is particularly common with pelvic cellulitis when the anterior cellular tissue planes are involved, and may be distressing in its intensity. Similar great suffering may be observed with advanced carcinoma of the cervix or corpus of the uterus (see p. 97).

Impacted pelvic tumours may also cause pain to be referred to the vagina or vulva, and this is especially the case when the tumour is malignant.

Certain conditions of the urinary tract, such as ureteric or vesical calculus, papilloma or carcinoma of the bladder, or carcinoma of the urethra, are also productive of vulvo-vaginal pain. Extreme overdistension of the bladder may cause it.

Neuralgic Pain.—Cases are not uncommonly met with in which much pain is complained of in the vagina or vulva, and yet no obvious cause is discoverable on examination. The possibility of such pain being pre-herpetic should be borne in mind.

BACKACHE.

One is less liable to make an error in diagnosis and miss the cause of the backache if one thinks of the various structures in the body, abnormal conditions of which may give rise to this symptom. The following structures will, therefore, have to be considered :—

1. The vertebral column.
2. The vertebral joints.
3. The sacro-iliac joint.
4. The coccyx.
5. The spinal medulla.
6. The spinal membranes.
7. The muscles of the back.
8. The abdominal viscera.
9. The aorta.
10. The pelvic viscera.

THE VERTEBRAL COLUMN.

Spinal Caries.—The patient complains of localized backache, constant in character and intensified by any movement, especially of the diseased

area, so that on bending she supports herself, and, contracting her lumbar muscles, holds the diseased portion of her spine as rigid as possible. Since the action of coughing tends to shake the whole body, it will be found that the patient, if she has to cough, does so with the minimum amount of exertion, and should she sneeze she will certainly complain that her backache is increased. Besides the pain in her back, the patient may complain of neuralgia in the course of some of the nerves, due to involvement of the nerve-roots or trunks in relation with the carious bone. The patient may also have a tingling or numb sensation in the legs, but otherwise sensation is unaffected. The functions of the bladder and rectum in the early stages are normal. The pain is relieved by lying down, especially in an extended position.

In some cases, when there is commencing pressure on the spinal medulla, there is associated contraction in the muscles of the leg, which is held rigidly in a position of flexion, and when the patient wishes to rise it may take her two or three minutes to straighten her leg.

On examining a patient with caries it will be found that there is distinct pain on pressure over the diseased vertebræ or on the application of heat, that there is diminished mobility of the spine, that the knee-jerks are exaggerated, and that the superficial reflexes are often increased. These signs, in addition to the symptoms already enumerated, together with an X-ray examination, if necessary, would lead one to a diagnosis of caries of the spine. Since, however, this disease is uncommon in an adult, it will run the risk of being missed in its early stages, for it may not be obvious previous to the production of any curvature, and there is a tendency to attribute the backache to neuralgia, rheumatism, or lumbago until the usual remedies for these conditions have failed.

Carcinoma and Sarcoma.—The backache associated with carcinoma of the spine is of a very severe and often burning character. Whilst it lasts, paroxysms of a severe type may intervene. The pain is worse on movement, and may be unilateral or bilateral ; the back is rigidly held, and the patient may complain of twitchings or spasms. The patient is generally over forty years of age, she wastes quickly, the glands become involved, visceral tumours may be detected, symptoms of compression soon declare themselves, and paraplegia ensues.

Carcinoma of the spine is generally due to a metastatic growth secondary to cancer in some other organ, most frequently the breast, and therefore this complaint is commoner in women. Sarcoma, which has signs and symptoms corresponding to the above, may occur at any age. The practitioner will not long remain in doubt should cancer be the cause of the pain, since life is soon terminated, death resulting, as a rule, in not more than six months. There is a danger in the early stages of confusing this complaint with hysteria.

Lateral Curvature.—Patients with lateral curvature of the spine complain usually of pain and weakness in the back, their general health being depreciated and their muscular tone lowered. If care is taken to examine the back, the diagnosis is apparent, the projecting scapula, prominence of the hip, and irregular alignment of the vertebral spine disclosing the nature of the case. The patient may have one leg shorter than the other.

THE VERTEBRAL JOINTS.

There are two forms of spondylitis in which backache may be a marked symptom—infectious and osteo-arthritic.

Infectious Spondylitis.—The best example of this is seen following typhoid fever in a condition sometimes called " typhoid spine," although it may occur after any infectious fever. In a case of typhoid during the convalescence, backache may be complained of in the lumbar region. The spine in this region is rigid, and there may be some local tenderness and swelling. The pain radiates round the body and down the legs, and may be very severe on movement. The patient may be unable to bend her spine, and walking will be difficult, whilst cramp in the legs may be troublesome. Indications of pressure on the cauda equina, as exemplified by paresis of the legs, and an alteration in reflexes may be occasionally noted. The condition may last some months.

Osteo-arthritic Spondylitis.—Spondylitis deformans gives rise to backache, which may be worse at night, when the spinal muscles have been relaxed by sleep, and which may be for some time the only symptom. Among the early symptoms accompanying the backache may be cramp in the legs. There is usually limitation of spinal movement in one or more directions. When the lumbar region is involved, pain is felt along the sciatic nerve and the gluteal muscles will atrophy. At the start of the disease there may be little to help the diagnosis, but as it progresses, the characteristic walk, either with the spine very bent or very straight, will appear. In doubtful and early cases an X-ray examination may reveal the deposit of new bone, and the fact that other joints are affected will afford a clue.

THE SACRO-ILIAC JOINT.

Strain.—This is an interesting and much more common cause of backache than is generally recognized, and accounts for a large number of cases in which no cause can be detected. The patient complains of pain over one or other sacro-iliac joint. The pain is worse (at night when in bed) after exertion and at the periods. A careful examination

of the lumbar region will disclose a very tender spot over some part of the sacro-iliac joint, pressure over which makes the patient wince. The patient will also complain of an exacerbation of the pain if the thigh of the affected side is flexed whilst the knee is extended. When the patient walks it is noticed that she leans somewhat towards the faulty joint. The diagnosis can be tested by fixing the pelvis with a bandage or strapping, and if the pain disappears the diagnosis is confirmed, and a properly fitting belt may be ordered.

Tuberculous Disease.—In these cases the pain of the sacro-iliac joint is made worse by any movement, not only of the joint, but also by contraction of the abdominal muscles, such as occurs in coughing or sneezing. The pain in the back may be reflected along the sciatic nerve to the buttock or thigh, or along the obturator nerve to the hip or knee. The psoas muscle may at times be affected, when the leg may be somewhat flexed. There is tenderness over the joint, especially on concussion or compressing the pelvis. The backache is usually of a one-sided character.

THE COCCYX.

Pain in the coccyx may be due either to sprain, fracture, dislocation, or to a general neurosis. The condition is known as coccydynia.

Traumatic Coccydynia.—In this case the pain dates from a blow or fall on the coccyx or from parturition. The backache, which is of a very definite, sharp, and painful character, declares itself when the patient rises, sits down, defæcates, or when the joint is moved. If the coccyx has been fractured, then there is undue mobility, and crepitus may be elucidated.

Nervous Coccydynia.—The commonest form of coccydynia is that associated with a general neurosis. The backache is of a duller and more aching character than is observed with injury, and is not particularly intensified on palpation of the coccyx or movement of the joint in the circumstances mentioned under injury.

The coccydynia of this class of patient will be cured by proper rest, dieting, and massage—in fact, restoring the patient, including her nervous system, to as healthy a condition as possible.

THE SPINAL MEDULLA AND CAUDA EQUINA.

Tumour.—The backache, which is localized and constant, is very severe and often of a burning or shooting character, and radiates along the nerves involved. In tumours of the cauda equina the pain is situated over the sacrum and extends down the thigh, the paralysis is of an atrophic

charactér, and the bladder and rectum are soon involved. With a tumour of the spinal medulla there is no stiffness of the spine or tenderness and no increase of pain on walking, as in caries, neither is the depreciation in health so rapid as in cancer of the vertebræ, in which disease, also, the history may give a clue. The later symptoms and signs are due to compression, and there is progressive paralysis with alteration in reflexes and rigidity of the legs.

Neurotic Backache.—This class of backache has been described under various names, such as neurasthenic spine, functional backache, and in cases where the patient has been in a railway accident or has had a blow or fall, as the "railway spine" or traumatic neurasthenia. It is a very definite and troublesome condition, and accounts for a very large number of the "backaches" which come under the observation of the medical practitioner. As it is so common, the real danger exists of attributing some backache to it which has really a more serious origin, and the failure to detect which in its early stages may be of the greatest moment to the patient.

The neurotic backache forms part of a general neurosis. The patient is nervous, irritable, and depressed. She will recount her various ailments with extreme minuteness and at full length, and in some cases apparently with a certain amount of satisfaction. There is lack of decision and loss of mental energy. She is apt to become easily tired, and there is an apparent loss of power in her muscles, so that she is incapable of much physical exertion, and gastro-intestinal atony may be present with flatulence and constipation.

The backache, which may be very severe and more or less continuous, is of an aching character and is situated more often in the lumbar region than elsewhere, but the patient will complain of pain in other parts of the body, such as in the nape of the neck and along the whole length of the spine. In some cases severe pain and tenderness are complained of in the region of the coccyx.

The pain may continue for weeks or months without getting much better or worse, and whilst stooping and bending makes no difference, fatigue increases it markedly for the time being and rest relieves it. The patient may not be able to see to read or sew as well as she did ; headaches are common ; she may complain of noises in the ears, and her sleep may be very disturbed.

The condition may be complicated with hysteria, when there may be loss of sensation, numbness or tingling in certain areas of the body, and in some cases there may be complete hemi-anæsthesia. At times, tender spots can be identified on pressure over the iliac spine, ovarian region, below the breasts, and on top of the head. There may be excessive tenderness on light palpation, and the patient may complain bitterly

on such examination, but on deep pressure there is no localized tenderness. The patient is often very sensitive to heat and cold, and may flinch on the least jar or touch.

The pain may radiate from the back into the limbs and the reflexes are exaggerated, the knee jerk being markedly increased, so that it can be very easily obtained by percussing the muscles on the front of the leg.

A careful and detailed examination fails to detect any symptom due to pressure such as might be caused by caries or cancer ; there is no prominence of the vertebræ, no rise of temperature, and the X-ray examination is negative, the spine often is not rigidly held, and no injury can be detected.

In some cases the condition is further complicated by nausea and vomiting ; and irritation of the bladder with frequency of micturition is not uncommon.

THE SPINAL MEMBRANES.

Chronic Spinal Meningitis.—The backache of chronic spinal meningitis due to syphilis is increased by movement or tapping over the painful area or on the application of heat. The pain is severe and radiates along any nerves involved, and numbness and tingling may also be complained of. There is also a tendency to cramp and to shooting pains. The reflexes are altered, and there is at first marked cutaneous hyperæsthesia ; later, anæsthetic areas may be detected. The back is rigid as also may be the limbs. If the inflammation spreads to the spinal cord, paralysis supervenes. Constipation is often marked, and retention of urine may develop. Lumbar puncture may assist the diagnosis, and the Wassermann reaction should be tested for.

THE SPINAL MUSCLES.

Dyspeptic Myalgia.—This was the name given by the late Sir George Johnstone to an affection of the lumbar muscles, due in his opinion to defective elimination of the products of imperfect digestion. The pain is diffuse, there is no local tenderness, and the urine is of a high specific gravity, loaded with urates and very acid.

Lumbago.—This condition of the lumbar muscles may be due to strain, cold, or exposure, especially in a rheumatic or gouty subject. The backache, which may be very acute, is intensified by bending forward, and is either constant or appears on the slightest movement of the muscles. This affection is almost entirely local in its results, the constitutional disturbance being very slight. An examination fails to discover any tender spots, and there is no cutaneous hyperæsthesia. Pressure

on the affected part gives relief, and the disease reacts well to the usual remedies. It lasts as a rule for a day or two and more rarely for a week or two.

Strain or Fatigue of Muscles due to Occupation or Faulty Position.—The backache is of a weary aching character, increased by exercise, and often by certain positions of the body. The pain may follow some sudden movement or a long period of standing. It may be associated with increased weight in the abdomen, such as obtains with pregnancy, fibroid tumours, ovarian tumour, or ascites. High-heeled boots are at times responsible for this variety of backache, owing to the prolonged action of the muscles of the lower part of the spine necessary to balance the woman. Another cause which has been described is a sagging in the bedstead due to the springs having given way, the result being that the woman lies with her back in an arched position all night. In these cases the backache is more particularly complained of in the morning, and, on the cause being discovered, placing a pillow under the back or a new bedstead cures the complaint.

Backache may also be due to the muscular effort required by a woman to keep her child in the proper position when nursing it, more especially if she has prolonged the lactation beyond the proper period.

Schoolgirls who spend a good deal of their time bending over their desks writing, and clerks working long hours under similar conditions, are subject to this variety of backache, and, again, the silly prejudice which prevents girls from resting in natural positions because they are unsightly may be the responsible factor.

The backache at times so bitterly complained of the day or two after an operation is due to the unusual position of the anæsthetized patient on the hard operating table.

Lastly, a woman may have such feeble and weak muscles that undue strain is thrown on the spinal ligaments with resulting backache.

THE ABDOMINAL VISCERA.

Certain of the abdominal viscera when diseased give rise to backache.

Kidney.—One of the most popular errors concerning backache is to associate it with disease of the kidneys, the advertisements in the daily press concerning quack medicines being responsible for this in the main. Kidney disease as a cause of backache is not very common, and even when pain is complained of, its seat is more often relegated to the loins. Of all varieties of kidney disease, chronic nephritis is the least likely to cause backache, and most often in this respect gives no trouble at all.

Acute Bright's Disease.—At times this condition is associated with

backache and tenderness on deep pressure. The pain is accompanied by nausea and vomiting, has a sudden onset, and dropsy may appear within a few hours. The urine, which is scanty, dark, of a high specific gravity, contains blood, a large amount of albumen, and epithelial, hyaline, and blood casts. In many cases the temperature is not raised.

Calculus.—A renal calculus may reach a large size, with backache as its only symptom. The pain, which is worse after exercise or jolting, may have exaggerated exacerbations and shoot down the course of the ureter. An examination of the urine will disclose blood, crystals, and perhaps pus, and blood is apt to appear in the urine after exercise, thus causing it to assume a smoky hue. There will be tenderness over the region of the affected kidney, which may also be enlarged. An X-ray examination in doubtful cases may clinch the diagnosis. There may be intermittent attacks of severe pain in the back, accompanied by fever and hæmaturia due to attacks of pyelitis.

Tubercle.—Backache may be present of a dull, aching character, and this may be the only symptom for quite a long while, meanwhile the patient appearing to enjoy good health. Micturition may be frequent, and pus due to pyelitis may be present in the urine for a very long time without the health undergoing any apparent depreciation. There may be intermittent attacks of hæmaturia. A bacteriological examination of the urine will probably furnish the diagnosis by disclosing the presence of tubercle bacilli. In advanced cases with pyonephrosis a tumour can be discovered which is tender on palpation, and there will most likely be fever.

Cancer.—Often the first indication of cancer of the kidney is hæmaturia, though backache may have been complained of. The urine may contain clots of blood, moulded more or less to the shape of the renal pelvis or to the ureter, and before long weakness and continued wasting will declare themselves. A tumour resonant in front from the presence of the colon will be found in the region of the affected kidney.

Pyelo-nephritis—Pyelitis.—One of the first symptoms of pyelitis and pyelo-nephritis is backache. Omitting cases due to an ascending infection along the urinary tract and dealing with the more obscure cases of hæmatogenous infection, the disease may declare itself first of all by a severe backache. The pain is accompanied by fever of a fairly severe nature, constipation, and perhaps vomiting. There is a marked tenderness over the affected kidney, which may be enlarged. An examination of the urine will disclose pus, perhaps a large quantity, and well-marked bacilluria. The hæmatogenous infection is liable to be overlooked in pregnant women and young children, in whom it is not so particularly uncommon, the incontinence of micturition in the latter, which at times defies treatment so markedly in many cases, being due to an unsuspected

bacilluria. If the disease is one-sided, and the ureter becomes temporarily blocked, the pus fails to reach the bladder, and the urine will appear normal, while in time the affected kidney will become larger and more tender. When the obstruction is overcome, the pus again flows into the bladder.

A movable kidney may be a cause of backache. The diagnosis of such cases is discussed on page 117. Besides this class of patient, however, there is another, a much larger one, the individuals of which complain of backache because they have been told that they have or imagine themselves to possess a movable kidney. The associated symptoms are generally of a neurasthenic character.

Stomach.—Whilst in most gastric disorders the pain complained of is in the epigastric region and between the shoulders, the pain of cancer of the stomach is occasionally most marked in the lumbar region. It may be some time before the symptoms of dyspepsia and vomiting appear ; meanwhile, although the tongue remains clean, the appetite will be bad, and one of the most striking signs is the continued loss of flesh. Quite apart from any bleeding, the patient may become very anæmic, and a complaint of pain may lead to an examination and discovery of a tumour. If repeated examinations of the contents of the stomach fail to detect hydrochloric acid, the fact can be regarded as of much importance from the view of diagnosis, though not much weight would be attached to such absence if only one or two examinations were made. The presence of small quantities of blood in the vomit on repeated examination is also very indicative of cancer of the stomach.

Rectum.—Internal hæmorrhoids, or a fissure or growth in the rectum, may cause backache.

Enteroptosis.—In woman the subject of enteroptosis, constant dragging on the mesentery associated with this condition gives rise to a backache which is relieved when the patient is lying down or after a belt has been properly adjusted. This is an important and common cause of backache.

THE AORTA.

The backache of aortic aneurysm becomes very severe and constant, is of a neuralgic character spreading round to the sides and into the groins, and may be accompanied with numbness and tingling in the legs. When the vertebræ are eroded and the cord is compressed, paraplegia will develop. Gastric symptoms, such as pain and vomiting, due to pressure on the stomach, may supervene fairly early, and if the bile duct is compressed there will be jaundice. An examination of the femoral artery may disclose the fact that pulsation is retarded.

In due time a definite tumour will be detected in the abdomen, which on palpation can be felt to pulsate, is expansile, and has a thrill, whilst on auscultation over the tumour a systolic murmur will be heard.

INFECTIOUS DISEASES.

The backache accompanying the onset of any acute infectious disease is well known, and is most marked perhaps in small-pox. This symptom is often very acute, but does not last long, and as it is accompanied by headache, pains in other parts of the body, and fever, its cause is, as a rule, not long in doubt.

THE PELVIC VISCERA.

Backache due to disease or misplacement of the female genital organs is not nearly so common as one might be led to believe. It is impossible to get away from the fact that, although great advances have been and will be made in the practice and science of medicine by men practising in the special departments thereof, there is a danger of their horizon becoming too narrowed thereby, so that a specialist is very apt, no doubt unwittingly, to ascribe the particular set of symptoms complained of as due to some abnormality in that region of the body in which he is most interested. This is true of all specialties. It has therefore come about that "backache" in woman has for years been regarded, both by the public and the profession, as most commonly gynæcological in nature. A careful examination with an open mind of a series of women complaining of backache will, however, prove this idea to be false. This has been very strikingly brought out by C. T. Dercum, who examined 122 patients complaining of backache, and applying for treatment in the gynæcological department in Philadelphia, with the following results: The pelvic organs were normal in 102, and there was disease in 20. Although, therefore, one finds from actual experience that in many cases of pelvic disease in women backache as a symptom is absent, nevertheless some patients complain of it, and it does not disappear till the disease has been cured or alleviated.

Whilst almost any of the diseases peculiar to women may own backache as a troublesome symptom, some of them are more particularly identified with it, such as misplacements, tumours, and chronic inflammations. The backache associated with pelvic disease is not increased by movements such as bending or stooping.

Prolapse.—At times this gives rise to a complaint of a dull, aching pain in the region of the sacrum, in addition to the dragging pain usually complained of (see p. 203).

Backward Misplacements.—These may be a cause of backache due

to the strain on the utero-sacral ligaments. A local examination will detect the misplacement (see p. 346).

There is a variety of backache which, instead of being of the dull, aching character usually complained of with chronic misplacements, is very severe and associated with pain of a forcing character. The pain has followed some fall or strain, and previously there have been no gynæcological symptoms. There is marked pain on defæcation, and the patient at the time of the accident may have fainted or felt very faint. The condition will probably be found to be one of acute retroversion (see p. 431).

Pelvic Inflammation.—Chronic inflammation of the pelvic organs in women is at times accompanied by backache. The pain, which is of a constant character, is also felt in the lower abdomen and thighs. In addition, irregular or excessive menstruation, dysmenorrhœa, and leucorrhœa are generally complained of, and a local examination will detect an enlarged and tender uterus or a uterus partly fixed by the perimetritis and parametritis. Diseased uterine tubes may also be felt, and with the speculum a discharge may be detected escaping from the external os.

Tumours of the Uterus or Ovaries.—A tumour by its mere weight, such as a large fibroid, will cause backache by pressure on the surrounding tissue. If the fibroid is of the sub-peritoneal variety, it need not necessarily cause any further symptoms. Again, a tumour by its position may cause backache. For instance, this symptom is often a marked one should an ovarian or fibroid tumour become impacted in the pouch of Douglas.

The backache, which may be fairly ascribed to cancer of the uterus especially in cancer of the cervix, is often a long time before it declares itself ; in fact, the cancer will be diagnosed most probably by its other signs and symptoms long before the backache becomes troublesome. One of the worst points about cancer of the cervix with regard to its early recognition for operative purposes is the late appearance of pain of any kind, so that one meets cases in which there has been practically no pain all through.

Lastly, 65 per cent. of women complain of periodic backache just before or during the commencement of menstruation. The backache is associated with pain in the lower abdomen, thighs, and breasts.

MENSTRUAL PAIN (DYSMENORRHŒA).

The subject of pain at the monthly periods is a complex one, and for purposes of consideration it is best dealt with under three heads : accord-

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ing to whether the pain is located in the uterus, in the appendages, or in parts altogether remote from the pelvic organs.

MENSTRUAL PAIN OF UTERINE ORIGIN.

At the outset it may be premised that in the large bulk of cases of dysmenorrhœa the pain arises in the uterus. That this is so is shown by the results of hysterectomy with conservation of the ovaries. It is known that removal of the uterus does not affect the well-being and functional activity of these glands, which continue to ovulate as before. If then " ovarian " dysmenorrhœa were of common occurrence, it would not be unusual to meet with women who, after the removal of their uterus, still suffered from monthly recurring attacks of pain in the region of the ovaries. This, however, is not so, such cases being so extremely rare that we, in our considerable experience, have never met with one. The pain of uterine dysmenorrhœa is either due to *tension* or to *colicky muscular contraction*.

In regard to tension, the reader may here be reminded that at each menstrual epoch a considerable increase in the vascularity of the organ occurs, and that the actual passage of blood into the cavity of the uterus is preceded by a petechial extravasation into the endometrium, and particularly into that part of it which immediately underlies the epithelium.

There is thus *a priori* ample reason to expect that the process should be associated with some degree of pain, and as a matter of fact most women at the outset of the period experience more or less sensations of an aching character in the lower abdomen—a " stomach ache " or " unwell pain," to borrow their own terms.

As regards contraction of the uterine muscle, it is believed by some that the passage of the blood out of the uterus is normally assisted by this means. Though proof one way or the other is practically impossible, we ourselves believe that uterine contraction is not a normal phenomenon of menstruation, but only occurs when, from some reason, the outflow is obstructed. Uterine dysmenorrhœa may, therefore, be classified according as the pain is due to tension or contraction.

PAIN DUE TO TENSION.

Virginal Type.—This form of dysmenorrhœa is by far the commonest type of monthly pain. In the past, the term " spasmodic ' has been applied to it—a misnomer, because the pain is not intermittent in character. We have adopted the adjective " virginal " as best suited

to it, because the pain is first experienced in early (and usually virgin) life. In by far the larger number of cases, however, it does not appear until menstrual life has been entered upon some two or three years, *i.e.* when the girl is about 17 or 18 years old.

The pain is of a boring, grinding character, situated in the lower abdomen in the mid line, from whence it may radiate down the vagina and thighs.

It begins, as a rule, slightly before the appearance of the discharge, and endures for from two to three hours up to the whole of the first day. When very severe it is associated with nausea or actual vomiting, and when the flow is fairly established, it subsides.

Most of the patients have so suffered with increasing intensity for some years before seeking advice. In old-standing cases there is a tendency for the pain to endure longer, until at last the whole of the period may be painful.

Examination of these patients reveals either an entirely normal uterus or else one excessively anteflexed and possessing an undersized conical vaginal cervix with a very small external os. It used to be assumed that these conditions were the origin of the pain by causing obstruction to the uterine flow. There is no ground for this ; the pain caused by obstruction is due to uterine contraction, and is colicky in character ; that with which we are now dealing is characteristically the pain of tension—gnawing, wearing, and constant, and moreover in the bulk of the cases no abnormality of the uterus or cervix is present.

There seems reason to believe that it is due to abnormal tension in the mucous membrane arising from delay in the escape of the extravasated blood.

The virginal type of dysmenorrhœa rarely persists after childbirth, and is, as we shall see, usually cured or markedly alleviated by operative dilatation of the uterus. This characteristic naturally suggests an obstructive factor in its causation ; we believe, however, that the relief afforded is due to the stretching of the tense tissue, with possibly rupture of nerve fibrils, and not to the enlargement of the channel, *per se.*

Congestive Type of Dysmenorrhœa.—Under this group fall a number of cases of dysmenorrhœa in which the pain appears to be due to the swelling and increased weight of the organ that is brought about by the monthly vascular congestion. The pain is most often an accentuation of a sense of heaviness and discomfort which is present at all times. It develops in later life, and often after childbirth, and most of the patients present some abnormality, such as an enlarged subinvoluted uterus, chronic cervicitis and metritis, retroversion, or other type of sustentacular relaxation. It assumes several forms, such as a sense of bearing down, backache, or pain referred to the ilio-pelvic regions. It is relieved, as a

rule, by lying down, and is not limited to the first day of the period in particular. It may begin some days before the onset of the period and often lasts throughout it.

PAIN DUE TO MUSCULAR CONTRACTION (OBSTRUCTIVE TYPE OF DYSMENORRHŒA).

Whilst it is very doubtful if rhythmic muscular contractions of the uterus occur during normal menstruation, they undoubtedly do so when the outflow from the uterus is obstructed and then produce violent attacks of colicky pain.

The obstruction may be relative or real. It is relative when the bulk of the products to be extruded is too large to pass readily through the normal channel. It is real when that channel is narrowed or altogether occluded.

Relative Obstruction.—Relative obstruction is seen under two conditions :—

1. When clots are formed within the uterine cavity ; and
2. When a membranous cast of the uterus is expelled at each monthly period.

DYSMENORRHŒA DUE TO CLOTS.—Normally menstrual blood does not clot, a peculiarity explained by the fact that it contains no fibrin ferment, as shown by Blair Bell.

The absence of fibrin ferment is probably due to selective action on the part of the endometrium, whereby the passage of this substance through it is arrested.

In diseased conditions affecting the endometrium, however, this arrest does not take place, and clots may then be formed within the uterine cavity, the expulsion of which requires strong muscular contractions productive of pain.

Painful menstruation due to intra-uterine clot formation is seen in various hæmorrhagic states of the uterus, such as myomata, adenomyomata, fibrosis, and endometritis. It is especially common with the first-named condition. In either case, the character of the pain is spasmodic, colicky, and recurring, and reaches its maximum immediately before the expulsion of the clot. Pain of this type is markedly increased by the ministration of ergot. This variety of pain is also sometimes seen in quite young girls, and is probably due to the formation and passage of small intra-uterine clots.

DYSMENORRHŒA DUE TO MEMBRANE FORMATION (MEMBRANOUS DYSMENORRHŒA).—In normal circumstances a degree of disintegration of the superficial layers of the endometrium occurs during menstruation owing to the extravasation of blood into its substance, and

examination of the menstrual discharge in normal persons will often reveal small fragments that have thus been desquamated.

In membranous dysmenorrhœa a massive separation of the endometrium takes place owing to hæmorrhage into it so excessive that a continuous sheet of blood is formed, at the site of cleavage. On the depth at which this sheet of blood is formed depends the character of the cast, which in some cases may be as thin as tissue paper (Fig. 55), and in others represents practically the whole thickness of the endometrium. The distinction of these casts from those due to extra-uterine gestation and very early intra-uterine pregnancy may be difficult, apart from microscopical examination, but in general they are much thinner and smoother, especially on their inner surface (see p. 211).
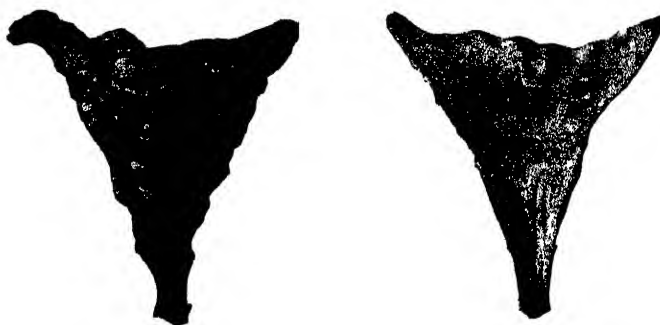
FIG. 55.—INTERNAL AND EXTERNAL SURFACES OF A CAST OF
MEMBRANOUS DYSMENORRHŒA.

The pain of membranous dysmenorrhœa is of two kinds : first, that due to the tissue tension evoked by the blood extravasation ; and secondly, that due to the uterine contractions as the cast is forced through the narrow cervical canal. It is therefore at first identical with that which characterizes the virginal type of dysmenorrhœa ; later on come violent colicky seizures until the cast is extruded, after which relief is obtained.

Membranous dysmenorrhœa is met with under two conditions : firstly, as a natural peculiarity in some women who suffer from it almost from the outset of menstrual life, and in whom no cause is apparent ; and secondly, as an acquired complaint, the result of endometritis ("endometritis exfoliativa ").

In the former group the extruded membrane is usually very thin and fragile, but in the latter it may be thick and succulent.

The condition, when it appears to be a natural peculiarity, is a very intractable one.

The acquired variety most commonly succeeds gonococcal infection of the endometrium and is more amenable to treatment.

Real Obstruction.—Real obstruction to the outflow of the menstrual discharge may be either congenital or acquired.

Under the former head we place such abnormalities as want of development of a uterine cornu, an imperforate condition of the cervix, absence of the vagina, either in whole or in part, and the failure of the vagina to unite with the urogenital sinus ("imperforate hymen"). Under the latter fall such abnormalities as obliteration of the cervical canal or vagina by scarring or growth formation.

In all these cases the pain comes on in violent colicky spasms, which may be agonizing in their intensity.

As regards congenital causes, dysmenorrhœa due to retention of blood in an undeveloped uterine cornu is noteworthy, because normal menstruation occurs in the meantime from the developed half of the organ. This condition should be suspected when, with monthly recurring attacks of severe spasmodic pain, a tumour is found lying to one side of a uterus markedly lateroverted towards the other side.

In congenital occlusion of the cervix, non-development of the vagina, and so-called imperforate hymen monthly attacks of pain are associated with amenorrhœa and evident deformity.

It is, however, to be remarked that "imperforate hymen" does not at first cause dysmenorrhœa, because the uterus is able to expel its contents into the easily stretchable vagina. It is not until this canal is filled to approaching its utmost capacity that the efforts of the uterus to distend it still further become apparent by severe colicky pain.

Acquired occlusion of the cervix or vagina during menstrual life is very rare. It is most often due to scarring following on operative procedures when affecting the cervix, and to inflammatory sloughing when affecting the vagina.

MENSTRUAL PAIN OF TUBAL OR OVARIAN ORIGIN.

Menstrual pain of tubal or ovarian origin is most often of a type comparable with congestive uterine dysmenorrhœa—that is to say, it constitutes monthly exacerbations of a pain always more or less present, and due to some disease or abnormality of the appendage. Thus the pains of salpingitis, oophoritis, and ovarian or tubal new growths all tend to be markedly increased by the hyperæmia of the menstrual period.

The pain is referred to the region of the diseased appendage, and varies in severity according to the condition there present. It may be very severe. Thus in chronic pyosalpinx and similar states, each monthly period may be associated with a subacute or acute recrudescence of the disorder.

Apart from these conditions, however, ovulation may be painful. Such may be the case if the normal dehiscence of the follicle be prevented, as, for instance, in adhesive states or peripheral sclerosis of the ovary. The intra-ovarian tension is then unduly raised and gives rise to pain. A similar phenomenon occurs when, after dehiscence, hæmorrhage into the follicle is excessive, the acute extravasation of blood into the ovary causes it to stretch rapidly, with the formation of a follicular blood cyst. In some cases the cyst may rupture and profuse bleeding take place into the peritoneal cavity. Follicular blood cysts thus formed give rise to extremely severe pain and signs of pelvic peritonitis usually at the time of the period. The features of such a case are generally very characteristic. The patient is usually young, the period over which she has suffered such severe monthly pain comparatively brief, and on examination a very definite mass can be felt in the pelvis. She is too young for fibroids, and her personal character and obvious virginity exclude the common causes of salpingitis.

Finally, there is a form of " ovarian " dysmenorrhœa which is extremely severe, the pain being referred to the region of the ovaries, although no obvious lesion of the appendages is present. Many of these patients are exceedingly neurotic, and the attacks are associated with marked hysterical crises. In the worst cases the woman is entirely incapacitated, for although the pain when it begins is limited to the time of the period, yet, after a while, it becomes more and more prolonged, until it extends into the intermenstrual intervals.

Many such cases have had abdominal section performed on them, and in a considerable proportion of the patients a characteristic condition of the ovaries is revealed. They are small and hard, with irregular bossy protuberances separated by deep furrows and with scarcely a trace of follicles.

It is interesting to recall that in mares a similar hard sclerotic condition of the ovaries is often associated with erotism and nervous sensitiveness so great that the animal is unworkable. Probably in both cases the emotional state is connected in some way with abnormality of the internal secretion of the ovaries.

This condition of the ovaries has been attributed to chronic oophoritis, but there is no evidence that it is of inflammatory origin, although the term " cirrhosis of the ovary " is often applied to it.

MENSTRUAL PAIN OF EXTRA-GENITAL ORIGIN.

Menstrual pain may be extra-genital in origin.

It is certain that beyond the local changes taking place in the genital organs at the monthly period, there occurs also a change more or less

profound in the body metabolism in general, probably dependent on qualitative or quantitative alteration in the internal secretion of the ovary and other endocrinous glands. Thus a sense of ill-being, in varying degree, is experienced by most women, while in some it amounts to actual illness. Further, all diseased conditions tend to be accentuated at the periods.

Extra-genital menstrual pain is very various—most commonly it represents either exacerbation of a pain more or less present all the month round, or an increased liability to one from which the woman is at all times prone to suffer.

Of all forms, headache is the commonest. Its character varies ; often it is vertical in character, but sometimes the occipital region and back of the neck is the region complained of. In other patients it is a true migraine, unilateral and associated with ocular symptoms. Whatever its type, it is rare to find that it only occurs at the menstrual period. Much more commonly the patient is liable to it at all times, but with special frequency at those epochs.

Another common form is backache—not of the sacral type, but one complained of high up in the lumbar region, and probably due to muscular and ligamentous weakness, specially noticed by the patient at those times.

Patients, the subject of ptosis of the kidneys, or general enteroptosis, frequently experience marked increase in their aches and pains every month.

Mental aberrations are quite common, such as depression and irritability, or hysteria. As is well known, insane and epileptic women are usually worse towards and at the monthly periods.

Exceptionally one meets with patients who state that they feel better while the flow is going on than at any other time.

INTERMENSTRUAL PAIN.

Intermenstrual pain or "middle-pain" is a complaint not uncommonly met with. Its causation has been the subject of much speculation and theory. The pain varies in its site. Thus it may be located in the middle line in front, over the sacrum behind, or to one or other side parallel with and slightly above the inguinal ligament. The last is the commonest type. The onset may be exactly midway between two menstrual epochs, but in most cases it occurs sooner than this. It may endure for a few hours only or for several days, and in some cases it is accompanied by a discharge from the uterus which may be serous or bloody.

In regard to causation, two theories are extant. The first supposes

the pain to be due to an abortive intermenstrual " period," an attempt at the intercalation of a second menstrual cycle between the phases of the normal one ; the second holds that the pain is due to some disease of one or both uterine tubes.

Concerning the first theory there is no actual evidence that a second menstrual cycle is ever interposed in the manner postulated, but, on the other hand, the possibility cannot be denied. The second theory is best supported by evidence, and we personally hold the view very strongly that in some, if not all, of these cases the pain is due to intermittent tubal distension.

It may be asked why such distension only occurs at stated intervals. The answer is as follows : The communication of the tube with the uterus is such a very narrow one that any pronounced swelling of the endometrium probably occludes it. Such blockage is very likely a phenomenon normally occurring during certain of the phases the endometrium undergoes between the end of one period and the commencement of another. So long as the abdominal ostium of the tube is patent the absence of communication of the interior of the tube with the cavity of the uterus is of small moment, the tubal secretion being discharged into the peritoneum. It is certainly a fact that if the abdomen be opened shortly after a " period," more or less serous fluid, varying from a straw-colour to a blood-stained brown, is always found in the pelvis. If, however, the tube be occluded at its abdominal end, distension must result until such time as the uterine ostium is again patent, when it will empty itself of its contents into the uterus. Such a proceeding, accompanied as it would be by tubal contraction and tension, might very well produce pain. In all the cases on which we have operated tubal occlusion was found.

DYSPAREUNIA.

Pain or difficulty on sexual intercourse may have its origin either in organic or psychical defect, but whichever of these forms its basis, a vicious circle is soon produced which involves both conditions. This is explained when one considers that in the absence of sexual appetite the introduction of an extraneous body into the vagina is probably just as objectionable as a digital examination of the rectum, and evokes feelings varying from discomfort to downright pain, according to the sensitiveness of the individual.

The mere instinctive reflex which constitutes the sexual sense in the lower animals is in civilized human beings replaced by a highly delicate cerebro-spinal mechanism consisting largely of conscious cortical impulses, centrally or reflexly aroused, and subject to control by collateral influences,

pressor or depressor in their effect, according to the mental peculiarities of the individual. This is more particularly the case in women than in men, because in the sexuality of the former the primitive instinctive spinal factor is proportionately far less. The sexual sense in both man and woman tends to be weakened by the constant exercise of the higher intellectual faculties, and especially is this so in women, in whom, on an average, it is normally less vigorous than in men. Thus the modern higher education of women, with its colleges and schools of advanced philosophy, science, and art, and its ideals of the independent fulfilment of the potentialities of the female intellect, tends markedly to abolish feminine sexuality, and it is amongst this class that the most marked examples of psychical dyspareunia are found.

It is further to be borne in mind that the prevalence of late marriages among the intellectual classes acts in the same direction, because not only reproductive vigour but also sexual vigour diminishes after a woman has passed her thirtieth year.

It has already been stated that the sex-sense of woman is not only differently constituted to that of man, but it is also on an average of lesser intensity. In a by no means inconsiderable proportion of women it is absent altogether, whilst in many it is completely in abeyance until stirred into activity by marriage. In women of this latter class, sexuality is very feeble at its first awakening, and is easily extinguished by the pain and discomfort of the first conjugal relations.

The fact that women as a class are far less sexually inclined than men is frequently not appreciated by prospective husbands, who have either formed their ideas on the subject by analogy with their own feelings, or draw them from experience gained with unchaste women, a picked class, and not representative of the sex as a whole.

Hence often arises that subsequent dissatisfaction which culminates in the unhappy marriages of which the doctor, and particularly the gynæcologist, sees so much. Men about to marry should be warned that feminine sexual feeling at its initiation often hangs on a thread which is easily snapped by impatience, want of consideration, and expressed disappointment.

The sex-sense of women is normally subject to periodic variations, the desire for congress being most intense or in some cases only existent during the first ten days after the menstrual period.

A husband should know this, so that he may endeavour to harmonize his own desire with the physiological facts appertaining to feminine sexuality.

And, further, he should know that desire in the female normally slumbers till awakened by courtship. Even in the lower animals congress is preceded by behaviour on the part of the male, having for its object the rousing of desire in his wished-for mate.

The endearments and caresses which a man practises by nature to obtain his wife should not be abandoned once he possesses her. Many husbands unfortunately do so abandon them, and ignorantly deeming that the need of them is past, turn to their wife for instant gratification, regardless of her feelings on the subject. In sexual matters the soul of a woman usually needs tuning up to the keynote of the man's, and he who forgets this must not be surprised if marriage for him turns out a discord rather than a harmony.

When investigating a case of dyspareunia it is important to ascertain :—

1. The site of the pain.
2. At what stage of the act it is experienced.
3. Whether it has been present from the outset of married life or has supervened later.
4. Whether there is obstruction.
5. The extent to which the sex-sense is present.

The Site of the Pain or Difficulty.—The pain may be felt either at the vaginal entrance or in the upper part of the passage, in which case it often radiates to the lower abdomen.

Pain at the orifice may be due to any abnormal physical condition affecting that part, and is of course normally present in the early days of married life. It is also characteristic of purely psychical dyspareunia.

Of all cases, the commonest met with is that of the recently married woman, on inspection of whom the hymen is found nearly intact and red and irritable looking from a degree of local inflammation, probably starting in the slight lacerations caused by attempted intercourse, and which in their extreme sensitiveness resemble a fissure of the anus.

In patients such as these a dual condition is present, one physical and one psychical. The orifice is undoubtedly tender—the pain that results in attempts at intercourse abolishes the sex-sense and inhibits the flow of mucus which normally under the influence of sexual excitement should assist the act. In consequence, resistive efforts are made, both voluntarily and involuntarily, the chief of which consists in a spasmodic contraction of the levatores ani muscles (vaginismus) whereby the orifice is narrowed and the act rendered yet more difficult and painful. Thus a vicious circle is established, its inception depending upon the sensitive condition of the hymen.

In other cases a definite deformity or disease of the orifice is discovered, such as an " imperforate hymen," vaginitis, an abscess of Bartholin's gland, fissure of the anus, inflamed carunculæ myrtiformes, kraurosis vulvæ, or a urethral caruncle.

The most troublesome of all varieties is that in which the condition is wholly psychical. In such, a morbid abhorrence of the act exists, which is translated into acute agony on any attempt at intercourse. As a result, powerful contraction of the levator muscles takes place, entirely preventing the entrance of the male organ (spasmodic vaginismus). In bad cases hysterical manifestations occur.

When the pain is complained of not at the vaginal entrance but high up in the canal some physical abnormality nearly always exists. In general it may be said that any disease or abnormality of the uterus or appendages may give rise to dyspareunia, but in practice there are certain of them particularly associated with this symptom, namely, retroversion of the uterus, prolapse of the appendages, and salpingitis.

In these conditions the pain is due to the impact of the penis on the sensitive uterus, ovary, or tube.

Retroversion *per se* is not a cause of dyspareunia because the normal uterus is a singularly insensitive organ, but as in these cases the displacement is often complicated by an unhealthy tender state of the uterus, prolapsed ovaries, pelvic peritonitis, or peritoneal adhesions, the symptom is very often present.

Prolapse of the ovaries is the commonest cause of dyspareunia of this type.

It is to be remembered that the ovaries in normal circumstances escape pressure both from their position remote from the vaginal vault and from their mobility which, even when they are lying at the bottom of the utero-rectal pouch, enables them to elude impact. When, however, in addition to being prolapsed, they are also fixed in that position, either by being imprisoned under a retroverted uterus or tethered by adhesions, they cannot escape the pressure, and pain is evoked.

Finally, it is obvious that when the pelvis is occupied by a tender mass, inflammatory or otherwise in nature, dyspareunia is a necessary result. In all these cases pain similar to that complained of during intercourse is to be produced by the pressure of the finger on the vaginal vault during examination.

Difficulty may be experienced solely as the result of total absence of knowledge on the part of the parties of the nature and mechanism of the act.

The Stage of the Act.—If the pain begins at the outset of the act, either some morbid condition of the vaginal orifice is present, or the case is one of psychical dyspareunia.

Where, however, it is not experienced until the introduction of the male organ is complete, some abnormal condition of the structures adjacent to the vaginal vault is to be inferred.

There is a rare type of pain which *follows* the act, and which would appear to be due in some way to the congestion caused by the orgasm.

The Date of Appearance.—Dyspareunia, which dates from the outset of married life, may have either psychical or physical foundation—nearly all the psychical cases begin thus early.

On the other hand, when it appears late, a psychical basis is unlikely, the condition being probably due to some altered state of the genital organs subsequently acquired. Of these, vaginitis, urethral caruncle, prolapse of the ovaries, with or without retroversion, and kraurosis vulvæ are the most frequent.

Thus it is quite common for patients to complain that since the birth of the child, pain on marital relations has been experienced.

In most of these cases some abnormal condition of the uterus or ovaries, such as retroversion or prolapse, will be found.

Is Obstruction present ?—Definite obstruction may be complained of. This may be caused by a narrow condition of the vaginal orifice, due to imperfect rupture of the hymen, or to complete occlusion by a septum. Less commonly cystocele, elongation of the vaginal cervix or tumours of the vaginal canal or cervix may be the cause. It is also noted in purely psychical cases, owing to the contraction of the levator ani muscles.

Absence of sexual feeling on the part of the woman by inhibiting the natural flow of mucus makes the surface of the orifice harsher and entrance less easy.

The Presence of Sex-Sense.—This is an important point to make clear, because, as has already been remarked in the absence of sexual excitement, coitus is very likely to be productive of discomfort or pain under any circumstance.

It is to be remembered that pain, due to a morbid physical condition, abolishes sex-sense, and therefore adds a psychical factor to the complex. In this regard the cases may be divided into four groups : 1, those in which no sexual feeling exists at any time ; 2, those in which, though at first experienced, it is abolished on account of the physical pain ; 3. those in which it continues in spite of the pain ; and 4, where the orgasm is complete but pain follows upon it.

It is obvious that of these groups the prognosis of the first is the worst, because in it a psychical basis to the pain is almost certainly present, whereas in the next group this element is merely secondary, and in the third and fourth is not present at all.

As regards the man, premature orgasm or defective erection must prevent proper intercourse.

VULVAL PRURITUS.

Itching of the vulva may be due to—
1. An abnormal state of the vulval nerves.
2. Glycosuria.
3. Leukoplakic vulvitis.
4. Irritating discharge.
5. Some skin disease.
6. Parasites.

Affection of the Nerves.—As a purely nervous affection, pruritus not infrequently occurs during pregnancy, and is usually then attributed to vascular congestion of the part. It is also met with apart from pregnancy, especially in women about the climacteric, but sometimes in young and healthy women, and then chiefly about the time of the period. When nervous in origin no abnormality of the parts is apparent, and the pruritus is prone to come in attacks which pass off as they came on without assignable cause.

Glycosuria.—Glycosuria is an important cause of pruritus, and is frequently the first symptom of which a diabetic woman complains. Examination of the urine is most important in every case of pruritus. The vulva in diabetic pruritus looks red, swollen, and often excoriated.

Leukoplakic Vulvitis.—Leukoplakic vulvitis is a chronic disease associated with intense pruritus.

The disease is a very important one, because in a considerable number of cases, squamous cell carcinoma develops upon it. It is, in fact, after X-ray burns, the best example of the precarcinomatous state known to the pathologist.

The pruritus may be severe, preventing sleep and undermining the general health. Like all other forms of pruritus it is worse at night. When fissures have formed, soreness and pain are added to the patient's affliction. The incidence of carcinoma is most to be feared at the stage when the fissures and nasty edged cracks develop. For further particulars, see page 274.

Irritating Discharges.—As a result of ichorous discharge from the vagina, cervix, or uterus, pruritus may be produced, though soreness is much more frequently complained of.

Skin Diseases.—Of these the commonest to produce vulval pruritus is eczema.

Parasites.—Thread worms may produce much vulval itching. Scabies and pediculi are also productive of this symptom.

STERILITY.

Barrenness in women is due to various causes, which may be divided into two groups—absolute and relative.

ABSOLUTE STERILITY.

This group, which may be shortly dismissed, comprises absence of the ovaries, uterine tubes, uterus, or vagina, either by congenital defect, destructive disease, or operative removal.

In regard to operative removal of the ovaries, it should be remembered that many instances of pregnancy after alleged double oophorectomy are on record, due to the fact that a small portion of ovarian tissue was unwittingly left behind.

Similarly, pregnancy has occurred after ligation of the uterine tubes or bilateral subtotal salpingectomy, the ligature having been absorbed or slipped or the cut end of the conserved portion of the tube having remained patent.

Finally, there is a remarkable case on record in which pregnancy occurred in a uterus that opened into the bladder, the vagina being absent. Intromission had taken place per urethram.

RELATIVE STERILITY.

Under this head fall the larger proportion of the factors that make for barrenness, for short of the absence of some essential in the mechanism of the reproductive apparatus no woman can be held to be necessarily sterile.

Thus pregnancy may occur in the face of most untoward circumstances. The spermatozoon can manage to reach the ovum though originally deposited on the outer surface of a hymen, having an aperture that will scarcely admit a probe, or in a vagina affected by profound disease. It may make its way through a uterus the seat of new growth or acute inflammation, while the ovum may find its way into the mere stump of a uterine tube, though it has to cross the breadth of the pelvis to do so.

Nothing indeed is more striking than the contrast between the extraordinary way with which the male and female elements effect conjunction in face of the greatest obstacles in some cases, and fail to do so in others in which the circumstances are entirely favourable.

In endeavouring to elucidate the cause of sterility in any particular

case, it must first of all be borne in mind that certain individuals would appear to be incompatible from the standpoint of procreation, although physically each may be perfect.   Indeed, it is a fact that perfection of physical form is unduly associated with sterility.

It must further be remembered that the most fertile period of a woman's life is between the eighteenth and thirtieth year.   After thirty the chance of her having a *first* child commences to diminish, at first slowly, but after thirty-five very rapidly ; it is reduced to very small proportions after forty, and practically disappears by forty-five.

Further, it is important to bear in mind that apart from intentional prevention, child-bearing does not necessarily immediately follow marriage, and that it is not uncommon for three, four, or five years to elapse before the first pregnancy occurs, after which further children may follow in quick succession.

There are probably several factors in the mechanism by which the spermatozoon ascends to the ovum.   That it is capable of progression on its own account is shown by those undoubted cases in which pregnancy follows deposition of the semen on the vulva.   Normally it is ejected into the upper part of the vagina, or even into the cervical canal, from whence it makes its way upwards by its own movement, assisted by the cilia of the columnar epithelium.

As regards the woman, it is well known that fertilization may occur in the absence of any gratification evoked by the sexual act, but nevertheless it would appear that pregnancy is much more likely if the orgasm is perfectly consummated.   This factor is certainly important in many of the lower animals (*e.g.* rabbits), in whom not only is the passage of the spermatozoa upwards assisted by sucking movements of the vagina, but also dehiscence of the follicle appears to depend on the stimulus of coitus.

Deficiency or absence of the sex-sense is vastly commoner among women than among men, particularly in the more educated classes.

In the females of the savage races and lower animals the sexual and maternal instincts are represented by a common craving, but among civilized races they are divorced into two ideas, both of which have a lessening hold upon the minds of modern women, the mental attitude of many of whom tends to be characterized by a shallow idealistic philosophy whose basis is simple egoism.   Hence the not uncommon type of young woman who regards the sexual act as something nasty and abhorrent, a degradation demanded of women by men for the gratification of the latter. The maternal idea survives in most of these women, probably because it is the more egoistic, and they are thus condemned to desire the result while spurning the means.

The ordinances of Nature evolved through countless ages cannot,

however, be disturbed without retribution ; the divorce of the sexual from the maternal instinct leaves the mechanism of the latter imperfect, hence often follows marriage marred by sexual disparity and sterility, or embittered childless spinsterhood.

Patients suffering from relative sterility may be divided into two classes ; firstly, those in whom some physical signs indicating defect are found ; and secondly, those in whom the sexual organs appear normal.

PHYSICAL SIGNS INDICATING DEFECTS OF SEXUAL ORGANS PRESENT.

As regards the first class, it may at the outset be said that every abnormal condition of the genital organs tends to sterility. There are certain of them, moreover, which are frequently met with in this connection.

Ovarian disease does not abolish the chance of conception unless it affects both ovaries to total destruction. Such an extensive lesion is usually malignant in nature.

Tubal disease is a much more potent cause of sterility, because it so commonly tends to be bilateral. Salpingitis, by closing the abdominal ostium of one or both tubes, lessens or abolishes the chances of pregnancy.

One of the commonest conditions of the uterus associated with sterility is the presence in it of myoma. The relation borne by these tumours to barrenness has been much discussed, some holding that they are caused by sterility, and some that the sterility is caused by them. While there can be no doubt that the presence of one of these tumours, when situated low down and under the mucosa, militates against pregnancy, the view that best meets the generality of cases is that both myomata and sterility have some common causative factor. That pregnancy may occur in a myomatous uterus is well known, and conversely women who have borne children may subsequently develop a myoma.

Another common accompaniment of sterility is chronic endometritis and cervicitis, often associated with some enlargement of the uterus and retroversion.

The mode in which this condition produces sterility is not definitely known, but it probably acts by interfering with grafting of the oosperm in the uterine mucosa, for it is certain that if pregnancy does occur under these conditions abortion in the earlier months is very common.

Cervicitis and vaginitis render pregnancy less likely, because the abnormal secretions are probably injurious to the well-being of the spermatozoa ; moreover, the latter causes coitus to be painful.

Spermatozoa will certainly live for many hours or even days in the normal vagina, but this is not the case when a toxic discharge is present.

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How far such conditions are operative against fertilization is not known, certainly pregnancy sometimes occurs in spite of the foulest vaginal discharge, such as that due to a breaking-down carcinoma of the cervix.

Diseased conditions of the vulva and vaginal inlet chiefly cause sterility by preventing the proper performance of coition. Thus kraurosis vulvæ and urethral caruncle may occasion great hypersensitiveness (see Dyspareunia).

PHYSICAL SIGNS INDICATING DEFECTS OF SEXUAL ORGANS ABSENT.

The second class, namely, that in which no gross defect of the genital organs is discoverable constitutes a far more difficult problem than that with which we have just been dealing. In some of these cases the most searching investigation fails to reveal anything amiss. It must be admitted that there are certain abnormalities of the uterine tubes and ovaries that can only be discovered by actually looking at them through an abdominal incision. Thus slight degrees of adhesive inflammation sufficient to close the abdominal ostia, but not enough to produce thickening, are absolutely undetectable by vaginal examination.

Similarly, the fact that an ovary is sclerotic and lacks the presence of healthy follicles cannot be proved, short of inspecting it. Hence in these cases there is always a possibility that the sterility may after all be due to definite physical change.

In the majority of the cases in this class, however, one or more of the following abnormalities will be found to be present :—

    1. Virginal dysmenorrhœa.
    2. Deficiency of the sex-sense.
    3. Dyspareunia.
    4. Profluvium seminis.

Virginal Dysmenorrhœa.—This type of dysmenorrhœa (see p. 98), when severe, is very commonly associated with sterility. In some of the cases the small conical type of vaginal cervix is present (see p. 245). Both the sterility and dysmenorrhœa used to be considered due to obstruction caused thereby. It has already been explained that this is probably not true so far as the menstrual pain is concerned, nor, considering the size of a spermatozoon, would it appear likely that the narrowest cervical canal could arrest its passage. Moreover, in the majority of these patients the cervical canal is not unduly small.

Deficiency of Sex-Sense.—This is so extremely common that it must be regarded as one of the causative factors of sterility. Its significance is twofold. In the first instance, deficiency of the sex-sense probably points to a generally inactive state of the generative apparatus,

and more particularly of the ovaries. In the second, absence of the sexual orgasm deprives the spermatozoa of a powerful aid to their ascent into the uterus. The exact mechanism by which the orgasm in the human female assists impregnation is not known. In certain of the lower animals it is ascertained that peristaltic contractions of the genital canal occur at the sexual climax.

In women the contraction of the levatores ani and ischio-cavernosi muscles probably drives the semen to the upper part of the vagina, while those of the abdominal muscles possibly produce an aspirating effect in the same direction.

How far the uterus takes part in the process is not known. By analogy with what occurs in the lower animals it should also contract. There is certainly some reason to suppose that the round ligaments shorten, and by pulling forward the body of the organ thrust the cervix into the pool of semen that is deposited in the posterior vaginal fornix.

Be these things as they may, it is certain that in a very large proportion of sterile women the sex-sense is either absent, so that they take no pleasure in the act, or imperfect, so that while a wave of desire is evoked no true orgasm occurs.

Dyspareunia.—The relation borne by dyspareunia to sterility is various (see p. 111). Severe pain may prevent intercourse altogether, or may indicate some physical abnormality. Given, however, that the act can be accomplished, and that no such physical disability is present, the relation borne by the pain to the sterility must be regarded in this wise —namely, that it is but an expression of the want of sex-sense, the drawbacks to which in this connection have already been explained.

Profluvium Seminis.—From a very large proportion of sterile women a history is obtainable, either voluntarily or by questioning, that the semen escapes from the vagina immediately after coitus. This phenomenon, which is well known to occur in sterile mares as well as sterile women, is a very remarkable one, and the reason for it is quite unknown. It seems difficult to believe that any exercise of compressional force which the parts are capable of could so entirely expel an adhesive fluid like the semen as not to leave a quantity behind sufficient for impregnation, seeing that a single spermatozoon is all that is required to fertilize the ovum.

It has, however, been shown that in cases of sterility the upper part of the vagina is free of spermatozoa a few hours after coitus, whereas normally they are found there for many hours or even days after the act.

In the matter of reproduction of the species Nature does things on a spendthrift scale, balancing the chances against the meeting of sperm and germ by a wholesale expenditure of the former. Of the millions of

spermatozoa contained in a single seminal emission, but one is needed to mate with the ovum.

Hence it may very well be that the phenomenon of profluvium seminis, while not entirely emptying the vagina of spermatozoa, yet so reduces their number that the chances of one of them fulfilling its proper destiny becomes infinitesimal.

MALE STERILITY.

Finally, barrenness may be due to sterility of the husband. This aspect of the question is very important in those cases in which no physical or psychical defect is discoverable on the part of the woman.

Male sterility may be due to operative removal or destructive disease of the testes or to imperfect development of those organs. The latter is chiefly met with in undescended testes, though the abnormal position is not necessarily so associated.

Sterility may be due to congenital defect of the sexual conduit, such as hypospadias, whereby the semen, though active, fails to be deposited in the vagina. Similarly, disease of the prostate or urethra may prevent the passage of the seminal fluid. In this connection stricture of the urethra is the most important.

The possibility of such should always be inquired into when investigating the question of male sterility, for an old gonorrhœal stricture frequently exists unknown to the possessor. Its presence results in the semen being slowly exuded instead of forced from the penis, whereby it is chiefly deposited in the lower part of the vagina instead of the vault.

Barrenness may be due to actual incompetence on the part of the husband or to premature or incomplete orgasm.

Finally, a man may be sterile in spite of the mechanism of emission being perfect, because the spermatozoa are either dead, enfeebled, or absent altogether.

All these points must be inquired into when, in a woman who complains of barrenness, no explanation is forthcoming as the result of examining her.

SYMPTOMS REFERABLE TO THE URINARY TRACT.

Complaints of symptoms referable to the urinary tract are far commoner in women than in men, though in general the cause underlying them is apt to be far less grave than in the male sex. Thus undue frequency of micturition, or difficulty in the act or pain accompanying

it or following it, are frequently met with in gynæcological practice, but in the large majority of cases these symptoms are temporary and evanescent in character, and unaccompanied by physical signs capable of explaining them.

RENAL PAIN.

Pain in the region of the kidneys may or may not depend on pathological alteration in those organs. Thus, aching in the loins and back, though commonly attributed by the laity to the kidneys on the score of quack advertisements associating backache with renal disease, is most usually due merely to weakness of the muscular structures of the lumbar region. Further, pain due to morbid changes in the gall bladder, appendix, or other parts may be referred to the loin. Of the abnormal conditions of the kidneys giving rise to renal pain the following are the most important : Injurious mobility, pyelitis, calculus, tubercle, and new growth.

Injurious Mobility (" Movable Kidney ").—The frequency and symptomatic importance of movable kidney still remains a vexed question, some authorities holding that as a pathological condition it is rare, while others believe it to be a common cause of pain.

At the outset it may be remarked that the adjective " movable kidney " is a misnomer, because the kidney normally has a considerable range of movement. The normal excursion is due to the diaphragm, which forces the organ downwards during respiration. The range of this movement varies in different individuals and is normally more easily felt in the right side than in the left, because in the former the kidney is placed at a lower level. The normal variation in the range of movement depends upon the personal extent of the diaphragmatic movement. It is to be noted that in parous women with lax abdominal walls this movement is apt to be more extensive than in the non-parous.

Whatever the extent to which the kidney can be forced down during inspiration it should, however, *return during expiration*—that is to say, its movement should be respiratory and to-and-fro.

The kidney is held in its place by the perinephric fascia, a firm sheet of fibrous tissue passing inwards to the middle line in two layers which enclose the renal vessels between them. It is probable that in normal circumstances the renal vessels take no part in the support of the kidney. It is indeed the general rule with pedunculated organs that they are not suspended by their neuro-vascular pedicle, but have a special sustentacular apparatus which saves the vessels and nerves supplying them from suspensory strain (*e.g.* the testis, the liver, and the spleen).

In truly injurious mobility of the kidney the sustentacular apparatus

has failed, so that the kidney becomes suspended by the renal vessels when the patient is in the standing posture. This unnatural method of suspension produces pain by the traction it exercises on the nerves supplying the kidney which enter it along with the renal vessels.

It follows, therefore, that all cases of suspected ptosis of the kidney must be examined in the *standing posture*, for it is only in this position that gravity can act to produce the displacement. When examined in this way there are two signs by which the observer can be certain that the organ is no longer suspended in its normal manner. They are—(1) loss of expiratory return, and (2) rotation of the kidney.

Loss of expiratory return is disclosed by observing that the organ remains motionless in its fallen position. This is because it is no longer tethered by the perinephric fascia through which it normally has a con
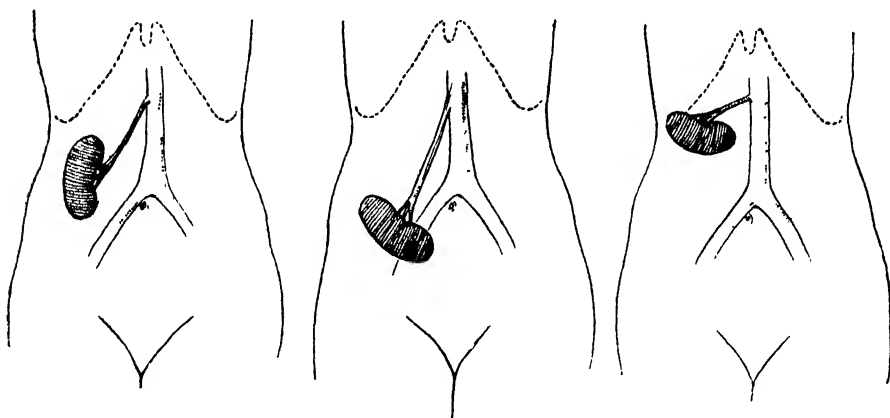
FIG. 56.—ROTATION OF THE KIDNEY.

nection with the diaphragm. A dropped kidney, therefore, instead of being more movable is really less movable than a normal one.

Rotation of the kidney is due to the fact that directly the organ becomes supported by the renal vessels it is obliged to describe the arc of a circle as it descends, and hence may come to lie almost horizontal with the hilum upwards (see Fig. 56). One of us made many experiments some years ago in reference to this phenomenon, and found that on the cadaver it was impossible to thus rotate the kidney without first dividing the perinephric fascia between the organ and the spine.

Though, as a rule, rotation of the kidney is accompanied by obvious vertical descent, yet occasionally cases are met with in which, probably on account of natural shortness of the renal vessels, rotation occurs with the organ but little or not at all below its normal position. In such the kidney lies, hilum upwards, only just below the costal margin (see Fig. 56).

Loss of expiratory return, together with rotation, are together an absolute indication that the kidney has become suspended in a faulty manner. It is further to be noted that the pain due to ptosis of the kidney is in the vast proportion of cases only evoked in the standing posture and is immediately relieved by recumbency. Exceptionally, pain may be felt when the patient lies on one side.

Pain that is not at once relieved by dorsal decubitus is almost certainly not due to ptosis of the kidney.

These facts are most important for the practitioner to bear in mind. "Movable kidney" in the sense of injurious renal mobility is constantly diagnosed when no such condition is present, and merely because the kidney can be easily palpated. The ease with which the organ can be felt in any case depends upon the skill of the examiner, the physique of the patient, and the extent to which it falls or can be driven down by respiratory movement of the diaphragm.

Glenard's method of palpating the kidney is the best in women (see p. 13).

This observer described the degrees of renal mobility according as the thumb of the examiner could be made to impinge, 1, on the lower pole ; 2, on the middle of the organ ; and 3, above the upper pole. One of us (V. B.), examining 100 consecutive women, obtained the following results :—

DEGREE OF MOBILITY IN 100 CASES.

Right Kidney.			
Not felt.	1st Degree.	2nd Degree.	3rd Degree.
9 Cases.	29 Cases.	22 Cases.	40 Cases.
Left Kidney.			
41 Cases.	38 Cases.	10 Cases.	11 Cases.

This table shows that the right organ is normally far more often palpable than the left, and that on the right side in 40 per cent. of patients the kidney can be made to descend low enough to get the thumb above its upper pole.

In far the great proportion of these patients, however, the mobility is in no sense injurious, and loss of expiratory return and rotation on descent will not be found.

The pain of ptosis of the kidney is referred to the loin and back and the affected side. It is of a dragging, wearing character, and may be complicated on occasions by violent attacks of pain, accompanied by vomiting, which are probably due to partial torsion of the renal pedicle. The kidney at these periods may be found tender and swollen. As before insisted on, recumbency alleviates pain.

The symptoms of ptosis of the kidney are mimicked by many other conditions, notably by morbid states affecting the gall bladder or appendix. Carcinoma of the ascending colon, or even of the pyloric end of the stomach, may give rise to pain simulating it. The chronic right-sided ilio-pelvic pain, to which reference is made on page 84, is often confused with it. Pyelitis due to a calculus or to b. coli infection gives rise to renal pain, and in all cases the urine should be carefully examined.

It should also be remembered that a patient with ptosis of the kidney may have some other morbid condition, and it is most important for the practitioner to bear in mind that a pain that does not disappear when the patient lies down is most unlikely to be due to this displacement.

Pyelitis.—Pyelitis may be set up by the presence of a calculus, or may be due to infection of the pelvis of the kidney by the tubercle or colon bacillus.

The subject of renal calculus and tuberculosis of the kidney will be considered presently.

Pyelitis due to the bacillus coli communis has been shown of recent years to be a not uncommon occurrence in women, especially during pregnancy. Two main forms are recognizable, acute and chronic.

Acute coli pyelitis has a sudden onset, with pain, high fever, and not infrequently rigors. The kidney, if palpable, is swollen and tender. There are three types. In the first or renal type the pain is referred to the region of the affected kidney, in the second or abdominal type more diffusely over the whole abdomen, while in the third or generalized type localizing signs are scarcely or not at all present.

In the first type the diagnosis is relatively easy, but many other conditions may be simulated by the second and third.

Thus when the abdominal symptoms are marked, there may be considerable flatulent distension with a rigid abdominal wall, suggesting peritonitis starting in the appendix, gall bladder, or other viscus ; whilst in the generalized type, septicæmia, enteric fever, pneumonia, or basic pleurisy may be mimicked.

In all three types the urine at some time or other contains pus, but inasmuch as the principal symptoms appear to be due to retention of infected urine in the kidney by blockage of the ureter, it may happen that several examinations may be necessary to reveal it. The urine is

generally acid, and is opaque in degree according to the quantity of pus and organisms present. In the slighter cases the turbidity may be solely due to bacteria. It has a distinctive fishy odour.

Chronic colic pyelitis is most often the sequel to an acute attack. The patient complains of aching tenderness in the loin or loins, and the urine presents the characteristics already mentioned. From time to time exacerbations occur, with fever and increased pain.

The diagnosis of pyelitis in general has to be made by exclusion. The most important cases are those in which an acute abdominal disaster such as an appendicitis or cholecystitis is simulated. In dealing with such it is important to remember that rigors and a markedly remittent temperature are greatly in favour of pyelitis.

Renal Calculus.—The pain of renal calculus may be due to pyelitis set up by the stone or to ureteric colic. When the first form is alone present, the diagnosis between calculous, b. coli pyelitis and tuberculous disease may be difficult. Renal colic, on the other hand, is so distinctive as usually correctly to indicate the cause. In all suspect cases an X-ray examination is imperative.

In general the urine from a calculous kidney contains more blood than pus. A large pyonephrosis, on the other hand, is most likely to be due either to calculus or to tubercle.

The pain due to a calculus may be markedly increased by exercise and relieved by rest. In this respect it resembles the pain of renal ptosis, but lying down rarely gives complete relief as it does in the latter condition. Renal ptosis and a calculus may, at times, coexist.

Tuberculous Disease.—Tuberculosis of the kidney in its earlier stages may give rise to little or no pain, but, later on, either because of the formation of a perinephric abscess, or from secondary infection of tuberculous products accumulated in the pelvis of the kidney, very marked symptoms may be present.

The kidney is enlarged and tender, the urine contains a large quantity of pus, and sometimes blood, and the patient has persistent remittent fever. The disease affects both sides in a large proportion of the cases. The diagnosis may be difficult.

Examination of the urine for the tubercle bacillus after centrifugalizing is important. A much enlarged kidney, with relatively few symptoms beyond remittent fever, is in favour of tubercle as against calculus and b. coli pyelitis, as is the presence of pus in a large quantity.

In all cases a cystoscopic examination of the bladder with catheterization of the ureters is desirable, and X-rays should be employed.

Renal Tumours.—The commonest enlargement of the kidney, other than those which are the result of inflammation, is hydronephrosis.

Though this condition may be due to blockage of the ureter by an

impacted calculus, or to occlusion of the duct by a pelvic new growth such as carcinoma of the cervix, in most cases it would appear to be caused by kinking of the ureter close up to its entrance into the kidney. Such kinkage may be the result of renal ptosis.

The physical signs of hydronephrosis are described on page 153.

The symptoms caused by it may be very few. Chiefly a sense of pain and distension in the loin on the affected side. Occasionally the swelling may abruptly disappear owing to escape of its contents past the site of obstruction (intermittent hydronephrosis).

All other tumours of the kidney are rare. They include carcinoma, sarcoma, adenoma, papilloma of the renal pelvis, polycystic disease, and growths of the adrenal glands. Malignant disease may be associated with profuse hæmaturia. Adrenal tumours do not at first affect the renal function—most of them are malignant. The insidious and painless appearance of a tumour of the kidney in a patient over forty years of age strongly suggests one of these growths.

VESICAL PAIN.

Painful micturition is much commoner in women than in men, though it is much less frequently dependent upon gross physical changes in the bladder. Transient attacks of dysuria, often associated with undue frequency of micturition, are very frequent. The pain may be felt at the beginning, during, or after the act, and is described as smarting, burning, or aching in character. The urine presents no change, and when these patients are subjected to cystoscopic examination nothing amiss with the bladder can be found. Many of these patients make loud complaint of their symptoms which, however, disappear as mysteriously as they came. Such apparently causeless dysuria not infrequently follows, for a while, abdominal section performed for pelvic disease.

Of the organic causes of dysuria, cystitis, urethral caruncle, urethritis, sub-meatal fissure, prolapse of the urethra, and malignant disease of the urethra or bladder are the most important.

Cystitis.—Cystitis may be due to infection by the colon bacillus, streptococcus, staphylococcus, or gonococcus.

B. coli cystitis is the commonest type. It may coexist with a pyelitis, or may be independent of that condition. It is extremely common as a secondary result of intra-pelvic suppuration, and therefore is found accompanying cellulitis and pelvic appendicitis. It is also seen after operations on the pelvic organs. The urine is cloudy from the presence of bacteria, desquamated vesical epithelium, mucus, and pus cells It is acid in reaction.

The streptococcal, staphylococcal, and gonococcal types of cystitis are

much more severe as a rule. The urine is markedly alkaline and ammoniacal, and the distress much greater. In many of the cases vaginitis is present also. In any of these types the condition may become chronic, with much thickening and corrugation of the bladder wall.

Tuberculous disease of the bladder is rare in women, and when occurring is usually secondary to tuberculous nephritis.

Urethral Caruncle.—A urethral caruncle presents as a small pedunculated excrescence of a vivid scarlet colour growing from the posterior urethral wall just at its junction with the vestibular mucosa (Fig. 57). In structure it is an inflammatory growth, containing a large number of plasma cells, and occasionally glandular spaces scattered throughout it. These latter represent portions of the normal urethral glands which have become included in the formation.
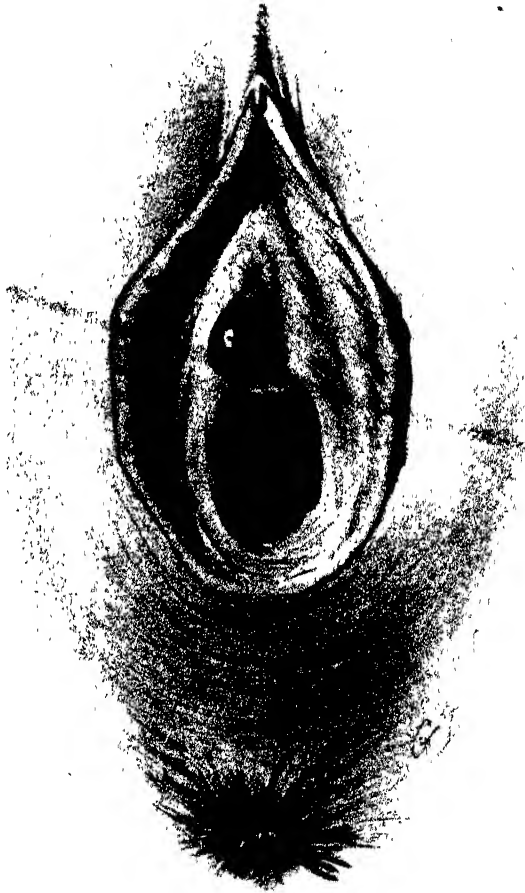
FIG. 57.—LARGE URETHRAL CARUNCLE.

Besides a caruncle, a diffuse caruncular condition involving the whole of the urethral orifices is frequently found, but without a localized protrusion, especially in elderly women. Both the localized caruncle and diffuse carunculosis of the meatus bear a close relation to the condition known as kraurosis vulvæ (p. 275), with which they are often associated. Both also

are curiously variable in the symptoms they cause. In many cases intense pain on micturition, soreness, dyspareunia, and sometimes hæmorrhage are complained of. In others, however, they may be discovered accidentally, not having given rise to any discomfort. The reason of this variation in different cases is not known.

Urethritis.—Inflammation of the female urethra may be set up by several causes. It is always present in the acuter stages of gonococcal infection, and beginning thus may pass into chronicity. It may also occur as an extension from other forms of vulvitis. The chronic type leading up to carunculosis is specially seen in elderly women without assignable origin, though occasionally a similar state of affairs is brought about as the result of long-continued gonorrhœal infection.

Sub-meatal Fissure.—This condition, to which one of us first drew attention, is not uncommon. The patient complains of painful micturition and local tenderness, and, on inspection, a small ulcerated fissure, extending from the posterior border of the meatal orifice backwards towards the margin of the vaginal orifice, is found (Fig. 58). The cause is obscure. In some of the cases which we have seen, there was a suspicion of gonococcal infection in the past, but, in others no such history was forthcoming.
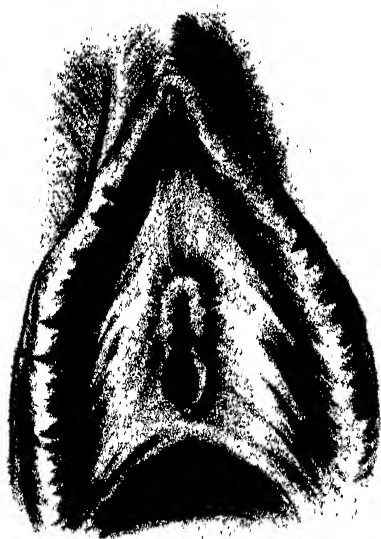
Prolapse of the Urethra.—Prolapse of the urethral mucous membrane presents as a soft, purple red

FIG. 59.—SUB-MEATAL FISSURE.

swelling in the situation of the meatus, in the centre of which the urethral canal is observable (Fig. 59). The condition is often associated with diffuse carunculosis, and gives rise to pain on micturition, soreness, and sometimes hæmorrhage. The prolapsed mass may undergo partial strangulation and even slough.

New Growths of the Urethra and Bladder.—Carcinoma may begin in the urethra. It forms a mass which can be felt through the vaginal mucous membrane, and, on manipulating it, blood escapes from the meatus. It is a rare disease, and is very painful.

Growths of the bladder are more common. They assume a papillary form, and are, as a rule, malignant. They give rise to

hæmorrhage from the bladder, and, later on, to severe pain and strangury with constant desire to pass water. They have to be diagnosed from other conditions causing hæmaturia.

When the mass is large it can be felt through the vagina, but in early growths, especially those assuming a villous character, nothing short of a cysto-scopic examina-tion is able de-finitely to reveal the condition.

This method of diagnosis should at once be em-ployed in all cases of hæmaturia in which there is any suspicion that the bladder is at fault.

Vesical Calcu-lus.—A stone in the bladder gives rise to symptoms very similar to those caused by a new growth in that situation, namely, frequent and pain-ful micturition, with the passage of blood and pus in the urine. As compared with a papilloma, the

Fig. 59 —Prolapse of Urethra.

urine more constantly contains pus and, less constantly, blood. It is nearly always alkaline and ammoniacal. Absolute incontinence occurs in some cases.

A vesical calculus is rare in a woman. When it occurs it is most often due to phosphatic deposit on a foreign body.

A renal origin of the symptoms having been excluded by palpation and X-ray examination, the bladder should be investigated by the cystoscope.

DIFFICULT MICTURITION.

Difficulty in passing water is most typically seen with marked prolapse of the anterior vaginal wall (cystocele). Patients suffering from this displacement frequently are unable to micturate until they have pushed back the protrusion.

It is also sometimes seen with tumours impacted in the pelvis, though frequency more often characterizes these cases.

The presence of a new growth or a calculus in the bladder may interfere and make the flow difficult. Women not infrequently state that they have difficulty in passing urine, although an examination fails to reveal any cause. Such complaints usually disappear as causelessly as they appeared.

FREQUENT MICTURITION.

Frequent urination in women is, in many cases, solely nervous in origin. Cystitis and other morbid changes in the bladder produce it as do certain conditions affecting the kidney, notably pyelitis, renal calculus, and diabetes. Displacement of the uterus is often a cause. Thus women with marked prolapse, when it affects the anterior vaginal wall, complain of it.

Retroversion may cause it, especially when the retroverted uterus is larger than normal, as with pregnancy or myomata.

Pelvic tumours of any considerable size usually cause frequency. Especially is this the case with uterine myomata of which more or less irritability of the bladder is one of the earliest symptoms.

RETENTION OF URINE.

There are three common conditions causing retention of urine in a woman. First, as a nervous phenomenon during the puerperium, or after abdominal and perineal operations ; secondly, with incarceration of the retroverted gravid uterus ; and thirdly, with impacted pelvic tumours.

The first of these needs no remark.

Incarceration of the gravid uterus occurs about the fourth month of pregnancy, and there will therefore be present the signs and symptoms proper to that period.

Of impacted tumours, myomata are the most frequent cause of retention of urine. The attack usually coincides with the onset of the menstrual flow being precipitated by the coincident vascular congestion. It is not uncommon to meet patients who relate that for several periods past they have had to have the " water drawn off."

The association of menorrhagia with retention of urine strongly suggests an impacted myoma of the uterus (see p. 181).

Of other tumours, perhaps the commonest to cause retention is an hæmatocele, the result of extra-uterine gestation. These cases are at times difficult to diagnose, because the symptoms of pregnancy are present more or less.

It should, however, be borne in mind that impaction of the retro-verted gravid uterus does not occur until the fourth month of pregnancy, whilst nearly all hæmatoceles are the product of a pregnancy only a few weeks old (see p. 210).

Ovarian cysts or pelvic masses the result of inflammation may be a cause of retention, but much less commonly than the conditions just described.

It is a most important fact to remember that retention often does not occur abruptly, but is cumulative, a larger and larger quantity of residual urine being left behind each time the patient micturates. Thus the frequency of imperfect emptying of the bladder may pass imperceptibly into the continuous leakage due to over-distension.

Very rare conditions causing retention of urine are carcinoma involving the urethra, urethral calculus, and disease of the spinal cord.

INCONTINENCE OF URINE.

This may be due to a gross physical defect, such as a vesical or ureteric fistula, or it may result from the overflow of extreme retention.

The cases presenting no obvious lesion or deformity are divisible into two groups : those in which it occurs at night only, and those in which it occurs during the day only.

Nocturnal Incontinence.—The patients are usually young girls or women in whom the condition has often existed since childhood. It is a defect of the detrusor muscle whereby involuntary contraction occurs during sleep. It is a great disability, especially to girls in service, and is very obstinate to cure. In a certain number of cases b. coli infection of the urine has been found.

Diurnal Incontinence.—The commonest cause of diurnal incontinence is relaxation of the vesical sphincter.

This very distressing condition is most often met with in individuals who have borne children, and it is ascribable to stretching and loss of the normal attachments of the sphincter. Occasionally, however, it is seen in sterile women, and even in virgins. When occurring after childbirth, it does not immediately follow that event, but comes on gradually perhaps years afterwards. In the earlier stages, the incontinence only occurs when the patient laughs, sneezes, strains, or walks downstairs, but in bad cases her urine may persistently dribble away all the day, except when she lies down.

PART III.

THE INTERPRETATION OF PHYSICAL SIGNS.

On appiying to the practitioner for advice, the patient will have recounted various symptoms, and additional information will have been elicited by him, which may go a long way towards arriving at a diagnosis of the nature of her malady. We have already dealt with the significance of symptoms in Part II. of this book, whilst in Part I. the various methods of making a physical examination have been described.

We shall now, in Part III., proceed to a discussion of the various signs that may be discovered on making such an examination, and show how a diagnosis is arrived at.

THE SIGNS DISCOVERABLE ON ABDOMINAL EXAMINATION.

ABDOMINAL TENDERNESS.

Tenderness to abdominal examination may be local or general, and may be associated with abdominal swelling or may exist without it.

The subject of abdomino-pelvic pain has already been so fully discussed (see p. 67) that little more need be added here.

The problem of distinguishing between tenderness due merely to hypersensitiveness, neurosis, or deliberate intent to deceive, from that caused by an actual underlying lesion is that which first presents itself. The circumstances of the case and the general condition of the patient, in particular her pulse-rate and temperature, usually suffice to enable the practitioner to decide this point, but there are certain cases in which the diagnosis requires great caution.

It is to be remembered that certain serious conditions are at their outset marked by no physical signs except tenderness. This particularly applies to early salpingitis, appendicitis, cholecystitis, and some forms of intestinal obstruction.

Further, hysterical women consciously or subconsciously wishing to deceive may simulate the general features of peritonitis fairly closely.

The presence of an abdominal swelling in doubtful cases favours a

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diagnosis of definite disease, but cases are not infrequently met with in which undesired pregnancy is alleged by the patient to be accompanied by severe abdominal pain and tenderness—probably in the hope that she may be relieved of her incubus.

Also it is to be remembered that a certain type of tubercular peritonitis is associated with retraction, not protrusion, of the abdominal wall.

ABDOMINAL SWELLING.

The following are the chief conditions giving rise to swelling of a woman's abdomen :—

FULL BLADDER.

PREGNANCY	Normal. Hydramnios. Molar pregnancy. Extra-uterine gestation. Chorio-carcinoma.
TUMOURS OF THE OVARY	Simple. Glandular. Dermoid. Papilliferous. Fibroma. Carcinoma. Sarcoma.
TUMOURS OF THE BROAD LIGAMENT	Cysts. Myoma.
TUMOURS OF THE UTERUS	Myoma. Adeno-myoma. Carcinoma. Sarcoma. Hæmatometra. Pyometra.
TUMOURS OF THE UTERINE TUBE	Salpingitis. Hydrosalpinx and tubo-ovarian cysts. Hæmato-salpinx. Carcinoma.
TUMOURS OF THE KIDNEY	Hydronephrosis. Pyonephrosis. Carcinoma. Sarcoma. Hypernephroma. "Movable" kidney.

TUMOURS OF THE LIVER AND GALL BLADDER.

Tumours of the Spleen.
Movable Spleen.
Ascites.
Encysted Ascites.
Pancreatic Cysts.
Retro-peritoneal Cysts.
Tumours of the Intestine.
Hydatid Cysts.
Gaseous Distension from Peritonitis or Intestinal Obstruction.
Fat.
Phantom Tumour.
Cystic Distension of the Vagina.

If a woman has a definite abdominal tumour apparently arising from the pelvis it is most likely to be due either to—

1. A full bladder.
2. Pregnancy.
3. An ovarian tumour or broad ligament cyst.
4. A fibroid tumour of the uterus.
5. A swelling connected with the uterine tube or tubes.

We shall therefore review the subject of abdominal swellings with special reference to these five conditions, and contrast with them the features of those other swellings which may simulate them.

THE FULL BLADDER.

The diagnosis of this condition is easy, since the passage of a catheter will at once cause the tumour to disappear. It is not safe to make a diagnosis of many abdominal swellings without first asking the patient to pass her water, or drawing it off.

It occasionally happens that the necessity of ensuring that the bladder is empty escapes the attention of the practitioner, and he therefore either misjudges the nature of the swelling altogether, or, if he is more observant, he may notice that pressure above the pubes causes a sense of discomfort which the patient, on being further questioned, may describe as a feeling of " wanting to pass water."

We will take it, therefore, that the fact that the bladder is empty has been assured, when the next question the practitioner must decide is whether the patient is or is not pregnant.

PREGNANCY.

In a woman of child-bearing age the practitioner must never fail to bear in mind the possibility of the swelling being due to a pregnant

uterus until he has proved the contrary. The failure of this precaution may lead to a surgical disaster, for many an abdomen has been opened on the supposition that the swelling was an ovarian cyst, when, to the chagrin of the operator, it has been found to be due to a pregnant uterus.

The question of the social position of the patient or of her civil state should not be allowed to weigh with the practitioner in the least, as he will on occasion detect pregnancy in those he least expects to find it.

Let us suppose that the abdominal swelling reaches as far as the umbilicus, is centrally situated, elastic, dull on percussion, that it can be felt to get hard and soft alternately (intermittent uterine contractions), that hard parts can be felt within its area (portions of the fœtus), that movements can be felt, and that on auscultation a blowing murmur can be detected synchronous with the patient's pulse-beat (uterine souffle) and that a double high-pitched sound can be heard recurring at the rate of 140 a minute more or less (fœtal heart sounds). In addition, the breasts are larger and firmer than usual, are slightly tender, veins can be seen coursing over their surface, the areola has got darker, at its circumference can be seen small white spots (secondary areola) and scattered over it minute prominences (Montgomery's tubercles), whilst, lastly, the patient states that she is generally regular but her periods stopped six months ago. Obviously the patient is six months pregnant, and yet such cases are not infrequently overlooked from sheer carelessness or an unsystematic method of investigation.

All cases of abdominal swelling due to pregnancy are not, however, by any means so easily diagnosed as the case given, the difficulty being caused by the absence of one or more of the ordinary signs of pregnancy which the practitioner expects to be present, and due, perhaps, to the fact that the child is dead, that the pregnancy is abnormal in type, or that it is associated with abdominal tumour.

ABSENCE OF SOME OF THE SYMPTOMS AND SIGNS OF PREGNANCY IN A
PREGNANT WOMAN.

AMENORRHŒA ABSENT (pp. 51 and 54).—The first indication to the majority of women that they are pregnant is the cessation of their periods. Amenorrhœa therefore has been endorsed by the lay community as well as by the members of the medical profession with this peculiar significance. But the practitioner may obtain a history that the patient has had her periods every month regularly, and this fact alone discountenances any idea on her part that she is pregnant. If, therefore, a woman continues to menstruate she will receive the announcement that she is pregnant with a considerable amount of doubt— a doubt often shared by many practitioners, who look upon amenorrhœa

as a necessary indication thereof, and if it is absent in these circumstances they may indeed be so satisfied that pregnancy is non-existent, that they do not trouble to pursue their investigations further.   Such cases are occasionally met with ; the loss for the first three months being due to hæmorrhage from the decidua vera lining the decidual cavity which the ovum has not yet filled, and after this to a slight separation of the placenta.

Further, a woman may be pregnant and suffer from irregular hæmorrhage due to some local disease of her cervix, vagina, or vulva.

If with an abdominal enlargement there are monthly or irregular losses of blood, and a pelvic examination discloses the fact that this enlargement is due to the uterus, and that local causes of bleeding in the cervix or vagina are absent, the question of a myoma has to be considered for interstitial or submucous tumours, especially if they are soft or undergoing cystic degeneration, have the feeling more or less of a pregnant uterus, and in some of these cases also breast signs are present (see p. 166).

It is, however, only in women over 30 years of age that such a difficulty is likely to occur, since at 30 myomata are rare, and this rarity rapidly increases for every year below this age.   In such cases it may be impossible to make a certain diagnosis and a decision must be deferred until the rate of growth of the swelling has been watched, for if the patient is pregnant the uterus will increase in size fairly rapidly, whereas a similar rate of growth in a myoma even when degeneration is taking place is exceedingly rare.   One has to remember in connection with this that the pregnancy might have terminated as a carneous mole, in which case the uterus will not increase in size and will have the harder feel of a myoma, and, further, whatever accessory signs and symptoms of pregnancy are present, such as breast changes, softening of the cervix, and morning vomiting, these will soon disappear.

Finally, the practitioner should remember that a girl may be impregnated before she has ever menstruated, although, obviously, such an event is extremely rare, or that a woman may purposely falsify her statement concerning her menstrual function.   For instance, a woman ob_essed with the desire for maternity may declare that her periods have ceased when they have not, or an unmarried girl may, failing to disclose that her periods have stopped, state that they are regular.

Since a pregnant woman cannot by law be hung, it occasionally happens that a murderess will attempt to escape the ultimate penalty of her act by false statements of a similar nature, and these may also be used by the unscrupulous for the purposes of blackmail.

In cases, therefore, when such false statements are suspected it will be wiser to postpone expressing a positive opinion, for if the woman is pregnant, time will eventually show.

Lastly, when in doubt, assistance may be obtained by further questioning the woman. If she is married there is no difficulty in inquiring as to the possibility of pregnancy, but if she is single or a widow, a practitioner has to be most careful in such an inquiry.

If, however, after an examination the practitioner suspects pregnancy, he may quite correctly inquire as to its possibility, pointing out that there are certain signs indicative of such a state, and that in its absence the abdominal swelling denotes a serious condition which may have to be dealt with surgically. In such cases the requisite information will often be forthcoming, while if the patient is not pregnant the practitioner will not have committed himself (for the direct assertion that a woman is pregnant may, in the event of a mistaken diagnosis, lead the practitioner into serious trouble), and if she is he will have obtained the information he requires. The practitioner should also remember that he has no right to disclose the nature of an employee's illness or condition to the employer without her consent, nor that of a daughter to her parents, if she be of age, without a similar acquiescence.

MORNING SICKNESS ABSENT.—The absence of morning sickness as a negation of pregnancy is of very little value and in a multipara of no value at all, since with them morning sickness is often absent.

BREAST CHANGES ABSENT.—It is true that in all pregnant women one or more of the breast signs will have made their appearance before term, still these may be a long while in becoming evident, and one not infrequently sees patients far advanced in pregnancy in whom the appearance of the breasts is of no value at all as a help to diagnosis.

INTERMITTENT UTERINE CONTRACTIONS ABSENT.—These contractions are not felt till about the sixteenth to the twentieth week, that is, some time after the abdominal swelling has become apparent, and the practitioner may have to make repeated examinations to assure himself of their presence.

UTERINE SOUFFLE ABSENT.—The uterine souffle is often an elusive murmur and may not be heard for days together. As it is due to the blood passing through the hypertrophied uterine vessels, it is heard more particularly when the uterus is rotated, so that one of its sides presents nearer to the parietes, and as the left side generally rotates forward it is most frequently heard in this situation.

FŒTAL HEART SOUNDS ABSENT.—Fœtal heart sounds must not be expected before the twentieth week. They may be absent after this period because the child is dead, or even if the child is alive the practitioner may fail to hear them until after repeated examination.

THE UTERUS IS TOO SMALL FOR THE PERIOD OF AMENORRHŒA.—It is possible for a woman to become pregnant during a period of amenorrhœa due to ill-health. In such a case an abdominal swelling

reaching, say, half-way to the umbilicus (fourth-month gestation) might be found in a woman with a history of seven months' amenorrhœa when the absence of other signs of pregnancy corresponding to a seven months' gestation might lead the practitioner to eliminate pregnancy as the cause of the swelling. Again, the child may be dead and amenorrhœa continue, so that the duration of the latter symptom will not correspond to the size of the uterus.

FŒTAL PARTS ABSENT.—It is not always easy to palpate the fœtus *in utero* either because of obesity of the mother, of an excessive amount of liquor amnii, or because the pregnancy has not sufficiently advanced. Such a difficulty only obtains up till the seventh month. After this, if a fœtus is in the uterus it can always be felt either per abdomen or vagina. Before this, if the liquor amnii is excessive the fœtal parts may be felt by suddenly palpating with the tips of the fingers and so displacing the liquor amnii, or if the woman is very fat by palpating, if possible, through the umbilicus, in which situation fat is absent (see p. 19).

In cases in which a diagnosis cannot be arrived at by ordinary means, an X-ray examination will decide the question, provided that the fœtus is sufficiently developed for its bones to throw a shadow, *i.e.* of not less than five months' growth.

PREGNANCY ABNORMAL.

Difficulty in diagnosing pregnancy may be experienced in cases of death of the child, hydramnios, hydatid mole, carneous mole, or extra-uterine gestation.

DEATH OF THE CHILD.—There are two signs which, if detected in a woman with an abdominal swelling, denote that she is for certain pregnant. They are "fœtal movements" and "fœtal heart sounds." The absence of these signs if the child is dead may lead to a considerable difficulty in diagnosis, more especially as the swelling will very likely not be as large as the period of amenorrhœa would indicate. Other signs, however, may be present to help the practitioner, such as the uterine souffle, the intermittent uterine contractions, and the condition of the breasts, or the patient may give a history of retrograde changes in her breasts, or of the cessation of fœtal movements.

HYDRAMNIOS.—In hydramnios the difficulty arises from the fact that the uterus is far larger than it should be, and that the child is most frequently dead.

Owing to the large amount of liquor amnii the uterus has a very cystic feel, and fluctuation can be detected in the abdominal swelling. Inter-mittent contractions are often not well marked, the signs of fœtal life may be absent, and an erroneous diagnosis of ovarian cyst has often been

made and acted upon—in the olden days the uterus being tapped and in more modern ones the abdomen being opened. A careful analysis of the symptoms and signs that are present will, if combined with a pelvic examination, lead, as a rule, to a correct diagnosis. In cases of great doubt an X-ray examination should be made if this be feasible.

VESICULAR MOLE.—Vesicular degeneration of the chorion is associated in some cases with a uterus enlarged more than the period of pregnancy warrants, together with hæmorrhage, and the absence of signs of fœtal life. As a rule such an abdominal swelling is diagnosed as one of pregnancy complicated in the manner under discussion, or associated with accidental hæmorrhage.

In some cases, however, when the blood is not retained in the uterus this organ is not unduly enlarged, and on account of the hæmorrhage and of the boggy feel of the swelling the diagnosis of myoma or cancer has been made. It may be impossible to arrive at a correct decision without dilating the cervix (see p. 167).

CARNEOUS MOLE —The abdominal swelling associated with a carneous mole reaches not more than half-way between the umbilicus and pubes, and is firm to the feel. or, if an intermittent uterine contraction happens to be taking place, actually hard. This firm sensation on palpation, together with the irregular hæmorrhage, has many times led to the diagnosis of a myoma, a mistake confirmed when a pelvic examination discloses that the swelling is uterine in origin (see p. 167).

It must, however, be remembered that in most cases this irregular hæmorrhage succeeded a period of amenorrhœa of one or more months' standing, that before this menstruation may have been quite normal, and that other of the symptoms or signs of pregnancy, such as breast changes, may have been or still may be present.

EXTRA-UTERINE GESTATION.—The diagnosis of an abdominal swelling due to an extra-uterine gestation may be beset with such difficulties as to render it an impossibility except on operative examination.

In a large percentage of cases of extra-uterine gestation a definite abdominal tumour cannot be felt.

An abdominal swelling, however, may be present under two conditions : (1) It may be the gestation itself, the child being either quick or dead ; and (2) it may be a collection of blood encysted either in the peritoneal cavity or between the layers of the broad ligament.

If the child is alive, the fœtal heart sounds and fœtal movements will denote the fact. In these circumstances it is not always possible by an abdominal examination alone or even by a pelvic one to decide whether the child is intra-uterine or not. The history will not be of much service, resembling as it does more or less that of a normal pregnancy, except perhaps that when about three months pregnant

or less the patient may have stated that she had a "bad stomach-ache," or slight attack of "inflammation of the bowels," for which she went to bed for a day or so, and which was really due to the pain of the ovum eroding through the tube with a consequent slight escape of blood into the peritoneal cavity. It has been noted, moreover, that the child appears so particularly near the parietes that observers have stated they could almost shake hands with it ; also that the pregnancy is more on one side than usual. Intermittent contraction over the swelling will be absent.

If the child is dead, one must be guided by the history of the case (amenorrhœa, fœtal movements, breast changes), though such a condition as this often goes undiagnosed until the operation discloses the nature of the case. This is especially so in those rare cases in which the child has been sequestered for several years in the abdomen.

If the abdominal swelling is due to a hæmatocele the symptoms and signs of a ruptured extra-uterine gestation will be present. The patient will have missed one or more periods, and some of the signs of pregnancy may be present, such as morning sickness and breast changes according to the period of pregnancy that has elapsed. The onset of the condition is ushered in with an attack of acute pain and faintness, and such attack may have recurred on one or more occasions (incomplete tubal abortion). Besides this, constant abdominal pain will be complained of, and the patient looks ill and is often markedly anæmic. On abdominal examination, if there is a swelling it will be due to a hæmatocele. It occupies the middle line, may reach as high as the umbilicus, and is tender and indefinite. On percussion there is varying resonance, the abdomen being dull in its lower part and becoming more resonant above (see p. 69).

On vaginal examination the lower pole of the swelling is found to occupy the pouch of Douglas, and the uterus, which is enlarged, is pressed forwards against the symphysis. The swelling is very tense and exquisitely tender. In almost all cases bleeding from the uterus is going on (Fig. 59).

PREGNANCY ASSOCIATED WITH AN ABDOMINAL TUMOUR.

Such cases may lead to great difficulties in diagnosis, which will vary according to the period of gestation.

The abdominal tumour most likely to cause trouble in diagnosis when associated with pregnancy is an ovarian cyst, and then more particularly when the gestation is under five months—that is, at a period when signs of fœtal life are not apparent.

Let us consider the case of an ovarian cyst reaching well up into

the abdomen with a pregnancy of, say, three months' duration or less.

In such a case there are amenorrhœa, breast changes, and morning sickness, associated with a large cystic swelling, dull to percussion, centrally situated (having pushed the uterus to one side or retroverted it), and reaching up to the umbilicus or higher. This difficulty then presents itself. Is the case one of hydramnios, or of a six months' gestation with a dead child, or of a cyst with a four months' pregnancy? If the swelling is palpated, intermittent contractions will not be felt; if it is auscultated, a uterine souffle will not be heard. Now although intermittent uterine contractions are not always felt in cases of hydramnios, a uterine souffle certainly should be if repeated examination is made. Its absence, therefore, suggests that the swelling is a cyst, probably of the ovary.

FIG 60.—HÆMATOCELE DUE TO RUPTURE OF TUBAL GESTATION.

On a vaginal examination being made, it might be possible to distinguish the ovarian cyst apart from the uterus, if not, the softened cervix and violet coloration of the vagina might still further suggest that the abdominal tumour was the pregnant uterus.

In such cases it may be wise to defer expressing a definite opinion until the duration of amenorrhœa will allow of definite fœtal signs being detected if the condition is due to pregnancy. If the case be one of six months' pregnancy with a dead child, then retrograde changes in the breasts and eventually hæmorrhage indicative of the uterus beginning to

expel its contents would supervene ; whilst if the swelling was due to hydramnios its rapid increase in size would lead to a correct diagnosis.

If the pregnancy is well advanced, then the question is whether the whole of the abdominal swelling is due to pregnancy or whether there is a tumour in addition. Signs of fœtal life will have been detected, but if the swelling is carefully palpated part of it may be felt occasionally to harden (the uterus), whilst at the same time the remainder undergoes no such alteration (the cyst). In such a case as this, supposing the abdominal swelling be considered as entirely uterine, then owing to the great distension it is obvious that some abnormal condition must be present, such as hydramnios or twins.

In hydramnios the child is most often dead, the presence, therefore, of vigorous fœtal movements is decidedly against this condition, whilst the presence of twins may be diagnosed in many cases with certainty by the detection of the fœtal hearts. The most difficult cases are those in which hydramnios in a case of twins affects one fœtal sac only. In such a case the detection of uterine contractions over the tumour may be the only means of arriving at a correct diagnosis.

The abdominal swelling may consist of a pregnant myomatous uterus with the myoma in front, in which case it may be difficult to determine not whether the patient is pregnant or no, for amenorrhœa so totally at variance with a fibroid will be present, but whether she has a myoma in addition to her pregnancy.

PRESENCE OF SOME OF THE SIGNS AND SYMPTOMS OF PREGNANCY IN A WOMAN WHO IS NOT PREGNANT

The practitioner must be careful to remember that there are certain symptoms and signs associated with pregnancy which may be present in a patient who is not pregnant.

AMENORRHŒA.—The causes of amenorrhœa other than pregnancy are discussed on page 42. In most of them the amenorrhœa is of a progressive character—that is, the periods both in amount and duration will have gradually become less until they cease altogether.

The abdominal swellings, apart from pregnancy, most likely to be associated with amenorrhœa are tuberculous salpingitis and malignant disease or papilliferous cysts of both ovaries.

UTERINE ENLARGEMENT.—Still more important is it to realize how exactly a uterus containing a fibroid may resemble one normally pregnant. Such similitude is observed when the uterus contains a single tumour only, submucous in position, and softened as the result of degenerative changes.

A uterus the seat of such a fibroid often grows rapidly and may be

associated with changes in the breasts, and thus pregnancy is very closely mimicked. Uterine contractions may even be present if the tumour is undergoing spontaneous expulsion, in which case the softened mass as it presents at the cervix may be mistaken for the products of gestation.

The diagnosis of pregnancy in the circumstances just related may be very difficult.

If the uterus is as large as a six months' pregnancy, the absence of
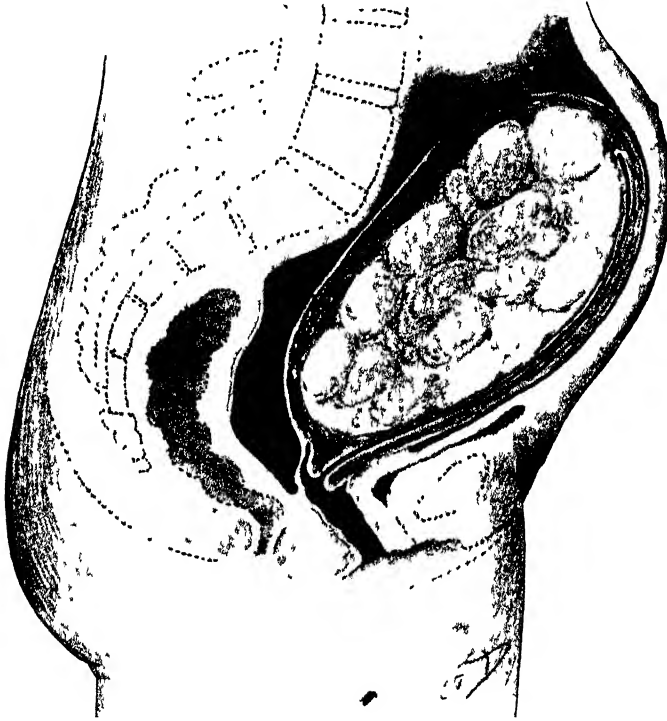
FIG. 61.—UTERUS "PREGNANT" OF A FIBROID (For comparison with Fig 62)

signs of the fœtus will disclose the nature of the case ; but in those cases in which it is not larger than a four months' pregnancy, diagnosis may be impossible except by waiting for further signs to develop. One important factor in the diagnosis is the menstrual history. If pregnancy is the cause of the enlargement, there should be amenorrhœa, although there may be bleeding from a threatened miscarriage. If the enlargement is due to a fibroid, menstruation should be regular or excessive. If doubt attaches to the menstrual history, the patient should be placed under observation to see if the next period comes on (Figs. 61, 62).

PRESENCE OF BREAST SIGNS.—The breast signs of enlargement, tenderness, darkened areola, and mucoid secretion which are present when pregnancy has advanced far enough for the uterus to be felt as a well-marked abdominal swelling may all appear, though rarely, in cases of ovarian cysts, uterine myomata, and pseudocyesis. Although the secondary areolæ and enlarged veins are not evident in such cases, yet it has to be remembered that in some pregnant women these never
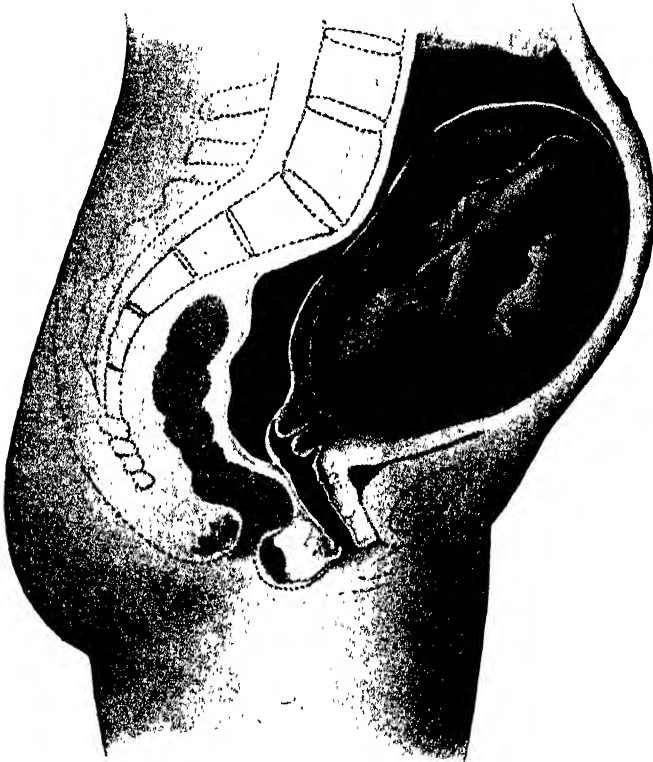
FIG. 62.—NORMAL PREGNANCY.

appear, that the pregnancy may not have reached the fifth month. or that the woman may recently have had a baby, when the value of breast signs as a means of diagnosis is very slight.

ALLEGED " QUICKENING."—The value of the sign of quickening will depend upon the patient's experience ; thus in a multipara such a history must be given due consideration, whereas in the case of a primigravida no reliance can be placed upon it, the gaseous disturbances in the

intestinal canal often being ascribed to fœtal movements, especially in cases of pseudocyesis.

PRESENCE OF A UTERINE SOUFFLE.—If a soft blowing murmur synchronous with the maternal pulse is heard over an abdominal swelling, this is sufficient evidence that that portion of the swelling at any rate, if not the whole of it, is uterine in nature. In nearly every case undoubtedly the uterus contains a gestation, but occasionally this sign may be detected in a uterus the seat of a vascular myoma.

MIMICRY OF FŒTAL PARTS.—The sensation of fœtal parts is sometimes obtained in women afflicted with secondary carcinomatous deposits in the omentum associated with ascites. As in many of these cases the primary growth is ovarian, amenorrhœa is often present as well, and the signs of pregnancy are fairly closely mimicked. With such advanced disease as this the patient is extremely ill ; moreover, the uterus will be found not to be enlarged.

PRESENCE OF INTERMITTENT UTERINE CONTRACTIONS.—This sign, though very valuable as an indication of pregnancy, is not quite infallible, since it may be obtained in the case of a large myoma in the process of extrusion by the uterus. In this case, apart from the fact that the other signs and symptoms of pregnancy would be absent, the bleeding is so severe that surgical interference would be necessary whether the patient was pregnant or not.

PHANTOM TUMOUR—PSEUDOCYESIS.—A woman may imagine herself to be pregnant when she is not so (pseudocyesis), or may believe herself to have an abdominal tumour in the absence of such (a phantom tumour).

In the case of a phantom tumour the patient suffers from flatulent distension, obesity, or both, and is likely nearing the age of the menopause, when the nervous system is more open to impressions, and she may have had a relative or a friend who has lately had an abdominal tumour, thus suggesting the idea.

In pseudocyesis the patient is usually approaching the menopause, so that amenorrhœa or irregular menstruation lends colour to her mistaken idea. She may be very anxious to have a child, and such a desire may originate the supposition. On the other hand, she may be in fear of pregnancy and the amenorrhœa due to the mental shock encourages the idea, or the abdominal swelling (fat, flatulence, or tumour) may give rise to the supposition.

In these cases of pseudocyesis the abnormal nervous system may produce morning sickness and the changes in the breasts (tenderness, secretion of a fluid), while the supposed fœtal movements are due to gaseous disturbances in the intestinal tract.

The abdominal swelling is usually due to obesity, to flatulence, or to an artificial lordosis assumed to mimic the carriage of a pregnant woman,

or perhaps a combination of two or all of these. There are no further evidences of a pregnancy, and a pelvic examination under an anæsthetic if necessary, will disclose the fact that the uterus and appendages are normal ; on the other hand, an ovarian cyst or fibroid or other abdominal swelling may be found.

When a patient first presents herself for a decision as to a supposed pregnancy, although it may be easy to eliminate pseudocyesis from the absence of any of the certain signs of pregnancy, nevertheless the practitioner may have difficulty in deciding the nature of the abdominal swelling. If this is not due to obesity, but to flatulence and lordosis, the swelling will be resonant. It will be impossible to define the limits of the swelling, fluctuation will be absent, there will be no pain or tenderness, and, most important of all, a pelvic examination may disclose the fact that the uterus and ovaries are normal, or that a tumour, uterine or otherwise, does not exist.

OVARIAN CYSTS.

Ovarian cysts occur in every decade of a woman's life, so that the age incidence is of no value in diagnosis, although as regards the variety of cyst it is to be remembered that dermoid cysts occur more frequently in the young, and malignant cysts at the extremes of youth and old age.

With respect to the reciprocal effect of child-bearing and ovarian cysts there are not sufficient data. It is obvious that if the ovaries are destroyed sterility results, although to the naked eye the destruction of both may appear complete and yet the patient conceive, for the smallest particle of ovary may be sufficient. On the other hand, it is stated with some authority that sterility favours the occurrence of ovarian cysts.

The menstrual periods in a patient with an ovarian tumour that has not grown to such an extent that the general health is affected should be quite regular, though the flow as a rule is scanty.

In a patient who has already had one ovarian cyst removed, especially if it was papilliferous in nature, the probability of the abdominal swelling being due to a similar cyst of the remaining ovary or to secondary deposits with ascites is very considerable.

USUAL FEATURES.—If on examining an abdominal swelling of any size we find that it does not move on respiration and that it is more or less centrally situated to inspection and palpation, if it is cystic and has a fluid thrill, if it is dull on percussion, if it is smooth to the touch and movable, and if, on pelvic examination, the uterus can be felt separable from the tumour and bimanually one cannot get one's fingers to meet below it, then we shall be justified in diagnosing the swelling as an ovarian cyst (Fig. 63).

DIFFICULTIES IN THE DIAGNOSIS OF OVARIAN CYSTS.

Just as with pregnancy some of the distinctive symptoms and signs may be absent, so the like may obtain with an ovarian cyst.

AMENORRHŒA OR IRREGULAR HÆMORRHAGE PRESENT.—Amenorrhœa usually signifies bilateral disease and the total destruction of both ovaries, since the presence of the smallest particle of ovarian tissue may be sufficient to keep the menstrual function active. Amenorrhœa is also
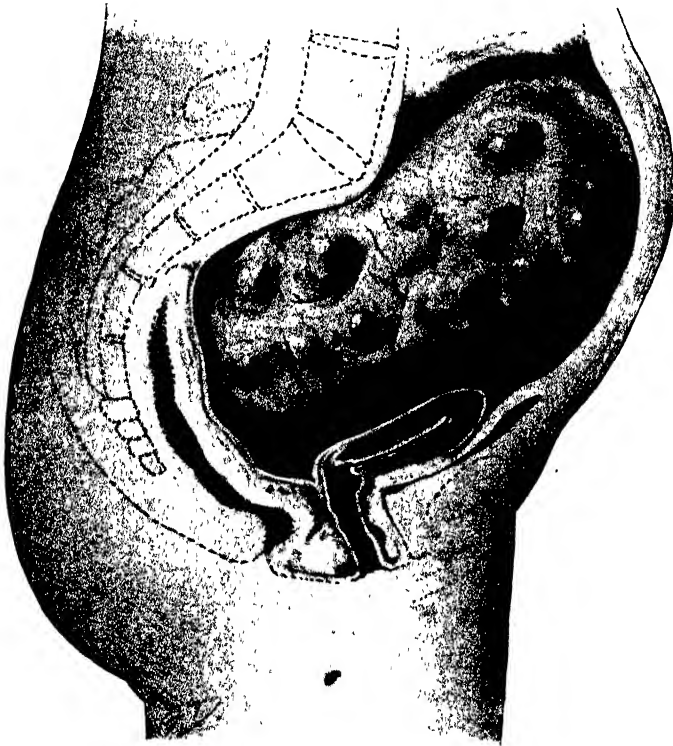
FIG. 63.—MULTILOCULAR OVARIAN CYST.

noted in patients in whom the health has been deteriorated by the presence of the cyst, especially if it is of a malignant nature.

On the other hand, irregular hæmorrhages are occasionally reported, and in such cases the tumour is apt to be dermoid or malignant in nature. Irregular hæmorrhage, with signs of an ovarian tumour, occurring in a patient who has passed the climacteric strongly suggests malignancy.

PRESENCE OF RESONANCE OVER THE SWELLING AND DULNESS IN THE FLANKS.—Rarely on percussing over an ovarian cyst a resonant or semi-

resonant note may be obtained if there is gas in the tumour ; the lateral borders of an ovarian cyst are also apt to be resonant from the intestine overlapping them. If ascites is present in addition to the cyst, then the dulness may be universal, although it can be noted that the dulness in the flanks is of a shifting nature, and that if the patient turns on her side resonance appears in the upper flank. The presence of ascites is very suggestive, nay, almost pathognomonic, of a papilliferous cyst, most of which are carcinomatous in nature.

MARKED LATERAL OR CENTRAL POSITION OF THE SWELLING.—An ovarian cyst is usually situated more to one side than the other, although the middle line is well overlapped, but it occasionally happens that the position of the cyst is so remarkably lateral that it is apt to be mistaken for a hydronephrosis. The differential diagnosis between these two conditions will be dealt with later (see p. 153) ; suffice it to say for the moment that as the colon stretches across a hydronephrosis such a tumour is always resonant in front.

Ovarian cysts large enough to be felt per abdomen at times fall into the utero-vesical pouch and occupy a very central position, and for this reason and the fact that the body of the uterus cannot be felt, their nature is apt to be misinterpreted. We have noted that in these cases the cyst is generally dermoid in nature and the pedicle has often been rotated (see pp. 202 and 238).

ABSENCE OF THE CYSTIC FEEL AND OF THE THRILL.—If the patient is stout or holds her abdominal muscles very rigidly, it may be impossible to obtain the cystic sensation, in which circumstances the swelling may be taken for a solid tumour.

In similar conditions it may also be impossible to elicit a thrill. The nature of the cyst and its contents may also interfere with the thrill, for if the contained fluid is very thick (glandular and dermoid cysts) it will be impossible to obtain it, as it will also be in multilocular cysts, in which there are several small loculi in front of the main cysts. The elucidation of a cystic sensation under like circumstances may also be impossible (see p. 173).

TENDERNESS PRESENT.—An ovarian cyst is usually neither painful nor tender, but if the pedicle is twisted or the tumour is inflamed, there will be marked tenderness on palpation. As there will be other symptoms and signs indicative of these complications the difficulty in diagnosis will not be materially enhanced, though in the absence of such symptoms and signs (see p. 157) tenderness over the swelling would be a point against its ovarian origin.

FIXATION OF THE SWELLING.—Ovarian cysts are usually movable, but fixation of the swelling does not in any way invalidate a diagnosis of ovarian cyst, since a cyst may become fixed by adhesions or by mere

size alone ; the fact, however, that the swelling is movable, especially in any direction, is a point in favour of such a diagnosis.

SMOOTH CONTOUR ABSENT.—It is characteristic of an ovarian cyst that its contour is smooth, though it occasionally happens that it will be nodular and uneven, as in the case of a multilocular or a malignant cyst.

RAPID INCREASE IN SIZE.—Ovarian cysts grow, as a rule, comparatively slowly, but if they become inflamed or hæmorrhage takes place into them then their size may rapidly increase. In malignant ovarian growths and papilliferous cysts the girth of the abdomen may increase very rapidly both from the growth of the tumour and the associated ascites.

THE CYST CANNOT BE REACHED FROM THE PELVIS.—Most small ovarian cysts are situated entirely in the pelvis : the diagnosis of such cases will be considered later (see p. 228). If the cyst is very large, it may be resting wholly above the pelvis, and perhaps no part of it can be felt on pelvic examination, but bimanually the fingers cannot, as a rule, be made to meet above the pubes.

It occasionally happens, however, that an ovarian cyst will have a long pedicle, and not being very large will float about in the abdomen so far from the uterus that it is often mistaken for a tumour of some other organ, and in these cases the fingers can be made to meet bimanually above the pubes.

THE UTERUS CANNOT BE FELT SEPARATE FROM THE TUMOUR.—In a typical case of ovarian cyst, as we have said, the uterus can be palpated as entirely free of the tumour, but it occasionally happens that the uterus is lying so close against the cyst that it may be impossible to palpate its body. The fact of their separability, however, may be ascertained by bimanual examination, for if the swelling as felt per abdomen was wholly uterine, then pressure on it with the outside hand should be conveyed to the finger touching the cervix, whereas if they are separable no such pressure transmission may be obtained (see p. 34).

If the cyst is firmly adherent to the uterus, pressure transmission through it to the cervix may be elicited.

An ovarian cyst may also obscure the body of the uterus by retroverting it, in which case the position of the cervix, pointing forwards and perhaps a little upwards, should draw attention to the fact.

ABDOMINAL SWELLINGS SIMULATING IN SOME RESPECTS AN OVARIAN CYST.

The difficulty in diagnosis, however, of ovarian cysts does not end with the fact that some of their distinctive symptoms and signs may be absent,

for there are many other cystic swellings in the abdomen which may at times cause an error in diagnosis, some of which are very rare and others comparatively common.

PREGNANCY AND ABNORMAL PREGNANCY.—We have already discussed fully the characteristics of these conditions, and the reader should compare these with those of an ovarian cyst (see p. 144).

FIBROID TUMOUR OF THE UTERUS.—The distinction of an ovarian cyst from a fibroid tumour of the uterus may be very difficult or quite impossible. In general, it may be said that most ovarian tumours are cystic, whilst most fibroids are solid to the feel. There are, however, all gradations in both classes of tumours. Solid ovarian growths are not uncommon, especially those due to malignant disease, whilst cystic degeneration sometimes affects a fibroid. The chief test of ovarian against uterine origin is the ability to feel the uterus distinct from the tumour, but even if this be possible, a pedunculated fibroid is not entirely ruled out. In general, it may be remembered that fibroids grow much more slowly than ovarian cysts, are associated with menorrhagia, and never form *de novo* after the menopause. A solid tumour rapidly growing is far more likely to be ovarian than uterine in origin (see pp. 149 and 173), and the same statement applies with even greater force to a tumour which makes its first appearance after the menopause.

ASCITES.—A large ovarian tumour filling up the whole abdomen may be mistaken for ascites. As a rule, if care is taken, there is not much difficulty in arriving at a correct diagnosis.

With ascites the abdominal swelling is symmetrical, whereas with ovarian cysts, it is mostly asymmetrical, and whilst in the latter case the abdominal swelling is more marked in front, in ascites there is often a noticeable bulging in the flanks. Further, in ascites a tumour cannot be felt on palpation, neither is there any hardness suggestive of a tumour, whilst a thrill can be obtained all over the abdomen, and is not limited, as in ovarian cysts, to a certain region. On percussion the front of the abdomen is dull with an ovarian cyst, whereas with ascites it is the flanks which are dull so long as the patient lies on her back ; when she turns on her side the upper flank becomes resonant.

If the amount of ascites is sufficient to mimic a large ovarian cyst, there must be some cause for it, such as disease of the heart, liver, or kidneys ; but such complications may also be present in a patient suffering from an ovarian cyst.

Assistance in the diagnosis may be obtained by taking the measurement between the umbilicus and the anterior superior spine on each side, for with ovarian cysts the distance as measured on each side varies, that on which the ovarian cyst is situated being the longer, whilst with ascites the distance on each side is equal, and, again, in ascites the

greatest circumference of the abdomen is at the umbilicus, whereas with ovarian cysts it may be above or below this point.

If, with a large indefinite abdominal swelling, great œdema of the legs is present, this point would be in favour of ascites as against a cyst.

If there is a combination of cyst and ascites, the diagnosis may become impossible if the cyst is a large one ; with a medium-sized cyst, however, the combination can usually be detected.

ENCYSTED ASCITES (SEROUS PERIMETRITIS and TUBERCULOUS PERI-TONITIS).—In this condition, owing to adhesions between various coils of bowel, an artificial cyst wall is formed within which fluid is imprisoned. The result is a cystic abdominal swelling the features of which may be so baffling that a correct diagnosis can only be made on opening the abdomen.

Such a collection of fluid may be due to a septic or tuberculous infection, so that in most cases there is a history of some pelvic inflammation which may also leave some signs in the pelvis, or the patient may be known to have tuberculous disease, or give a history of night sweats and wasting, or a further examination may disclose tubercle in some other organ.

Such information is, however, not always obtainable, and both serous perimetritis and tuberculous peritonitis may supervene without any special feature, apart from the swelling, to which the patient's attention may have been drawn. As tubercle generally affects the menstrual function, a history of amenorrhœa may be suggestive.

When comparing an abdominal swelling due to encysted ascites with a typical ovarian cyst one notices that the former has not got the well-defined boundaries that the cyst wall gives to an ovarian tumour ; in fact, its boundaries are distinctly irregular, owing to the arrangement of the intestines and omentum. Such cysts are never very tense, so that extreme firmness of the tumour is a point against such a diagnosis.

Lastly, whilst the limited fluctuation of encysted ascites resembles that of an ovarian cyst, one seldom obtains any marked thrill. There is often, however, resonance between the dull area and the pubes which is a distinct point in favour of its not being ovarian, since in the latter the dulness nearly always reaches down to the pubes, and only if it is small and has a very long pedicle, so that it is floating well above the pelvic brim, can such a resonance be obtained.

Many collections of fluid encysted among the intestines are more or less resonant all over.

On pelvic examination it may be possible to exclude an ovarian cyst by feeling the ovaries apart from the tumour, but this is not always possible because of inflammation of the uterine tubes and ovaries, which may have been the channel through which the infection occurred.

If the cause of the encysted ascites is tubercle, thickened masses may

be felt in the neighbourhood of the cyst, consisting of tuberculous deposits in the mesentery and omentum.

BROAD-LIGAMENT CYST.—The diagnosis of a broad-ligament cyst as distinct from that of an ovarian is very difficult and often impossible.

A broad-ligament cyst is not as a rule movable, and is so closely adjacent to the uterus that the body of the uterus may not be separately palpable (Fig. 118).

A cyst that is peculiarly unilateral and immovable is very likely to be situated in the broad ligament. Further, many of these tumours are so tense as to be mistaken for a fibroid growing between the layers of the broad ligament.

Occasionally a cyst forms on the outer third of the mesosalpinx, in which case it is pedunculated and mobile, and may then lie directly behind the uterus and exactly mimic a cyst of ovarian origin (Fig. 121).

Since a broad-ligament cyst practically never attains the extreme size that an ovarian cyst may do, a very large tumour is likely to be ovarian in origin.

CYSTIC TUMOURS OF THE UTERUS.—The abdominal swelling due to a cystic tumour of the uterus in some respects may simulate an ovarian cyst.

It is dull on percussion, has a cystic feel, may be smooth in contour, is a little movable, and there is resonance in the flanks. It is true that a thrill cannot be obtained, that its mobility is not marked, and that on pelvic examination the tumour appears to be one with the uterus, but then all these features might obtain with an ovarian cyst, and if the matter rested here a certain diagnosis may be impossible.

The history and other aspects of the case as a rule, however, are such that nearly always the nature of the condition will be cleared up.

Cystic tumours of the uterus are found in three conditions : fibro-cystic tumours of the uterus, hæmatometra, and pyometra.

Fibrocystic Tumours of the Uterus.—A fibrocystic tumour of the uterus is caused by cystic degeneration of a fibroid. The patient will, therefore, almost certainly be over 30 years of age, and most probably over 40. As a rule, also, the patient will give a history for some years of increased menstruation and often of dysmenorrhœa If, however, the degeneration has taken place in a sub-peritoneal myoma, the most usual situation, the menstrual function may be quite normal, the cystic sensation will be more apparent, and a resemblance of a thrill may even be obtained.

It may, however, happen on bimanual examination that other fibroid tumours can be detected, or the irregular nature of the swelling, when a sub-peritoneal fibroid is affected, may become apparent, although it is possible for most of an ovarian cyst to be hard with one cystic area, and also for the contour of such a cyst to be irregular. Further, the con-

tinuity or otherwise of the uterus with the tumour may be recognized, although if the cervix is drawn up out of reach the diagnosis becomes much more difficult.

There is one sign which makes the diagnosis of a doubtful case nearly certain, and that is when on passing a sound into the uterus, the length of its cavity is found to be markedly enlarged. This test is occasionally fallacious, for if the degeneration has occurred in a sub-peritoneal fibroid, and no others are present in the uterus, the cavity may be of the normal length, whilst rarely an ovarian tumour may so pull on a uterus as to lengthen it.

If a uterine souffle can be heard over the swelling, its uterine origin is assured ; and finally very large cystic tumours are much more likely to be ovarian than uterine.

Nevertheless, the diagnosis between a fibrocystic tumour and an ovarian cyst appears at times to be impossible, and every surgeon of any experience has had reason to change his opinion after he has opened the abdomen. As, however, the treatment for both conditions is the same, no harm results.

Hœmatometra.—A collection of menstrual blood in the uterus sufficient to distend it into a cystic tumour can only be due to some obstruction in the genital canal preventing its escape. Such an obstruction may be congenital owing to the presence of an " imperforate hymen," vagina, or cervix, or acquired from an occlusion of the cervix or vagina following inflammation or due to post-operative scarring. The menstrual history may, therefore, afford some clue, for if the obstruction is congenital in nature the patient will be below 20 years of age and will never have menstruated, whilst if it is acquired there will be a history of some inflammation or operative interference, and amenorrhœa will have followed and been present for some years, the higher the obstruction the quicker being the production of the cystic uterus. We have, however, pointed out that amenorrhœa may be associated with ovarian cysts which also originate sometimes in girls before puberty.

A pelvic examination will disclose the nature of the obstruction and so settle the diagnosis (see also p. 170).

It is possible for a hæmatometra to coexist with regular menstruation in the case of an undeveloped uterine cornu distended with blood. Such cases are usually mistaken for an ovarian cyst and particularly for an ovarian blood cyst, the symptoms of which (see p. 199) it very closely resembles.

Pyometra.—The uterus may become distended with pus as with blood, but very rarely is it so enlarged as to form a cystic abdominal swelling (see p. 170).

Such a condition is generally due to cancer of the corpus or endo-

cervical cancer of the cervix, less frequently to a sloughing fibroid or senile endometritis, though in the latter case it is never large enough to form a cystic abdominal swelling. The passage of a sound will be followed in all cases by a gush of pus.

In the case of cancer the retention of pus is generally complete, the growth filling up the cervical canal. When due to a sloughing fibroid or senile endometritis a certain amount of pus, of a most foul-smelling nature, is intermittently expelled, and this may give a clue to the nature of the swelling.

The history of the case may bear on the cause of the pyometra. For instance, cancer of the corpus is very rare before 40, and more often
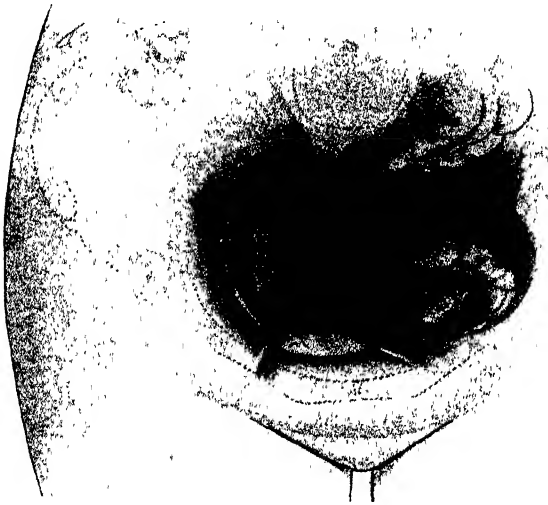
FIG. 64.—HYDROSALPINX OF THE LEFT TUBE.

supervenes after 50. Cancer of the cervix occurs as a rule between 40 and 50, although in many cases the age of the patient is much younger; in a very large proportion of the cases the patient has given birth to a child.

CYSTIC DISTENSION OF THE VAGINA.—In most cases of retention of menses, due to so-called "imperforate hymen," the swelling felt in the abdomen is due to the distended vagina, the hard swelling felt at the top of it being the uterus (see p. 270).

HYDROSALPINX AND TUBO-OVARIAN CYST.—A hydrosalpinx may form a cystic swelling large enough to reach above the pubes. It will perhaps be a little more laterally situated than the average ovarian cyst, but beyond this the resemblance may be extremely close (Fig. 64).

It may be quite possible to make a certain diagnosis between a hydro-salpinx and an ovarian cyst if the latter has a long pedicle and is well free of the uterus.   On the other hand, it is never possible to diagnose for certain a hydrosalpinx, since on bimanual palpation, owing to its close proximity to the uterus, it may exactly simulate a broad-ligament or ovarian cyst adherent to the uterus.

The difficulty of a differential diagnosis is also enhanced from the fact that in a large number of these cases there is an absence of any history, and symptoms are conspicuous by their absence.   It may be that in a few cases one will obtain a history of past pelvic inflammation.

Finally, there is a variety of cystic swelling, which is formed partly from the ovary and partly from the tube (tubo-ovarian cyst).   These

FIG. 65 —DOUBLE PYOSALPINX.

cysts are inflammatory in origin, are characteristically " retort-shaped," fixed, and lie lateral and posterior to the uterus.

PYOSALPINX.—A pyosalpinx may very occasionally form a cystic abdominal swelling reaching even as high as the umbilicus.   We re-member a case of bilateral disease of this size (Fig. 65).

The condition will obviously be very chronic, and symptoms indicative of acute sepsis will, therefore, very likely have passed away (see p. 68).

The patient will have a history of some serious illness of a pelvic nature following childbirth, miscarriage, or vaginal infection, and she has probably been an invalid for some time.

On abdominal examination a cystic swelling will be found laterally situated, dull on percussion, and somewhat tender.   There will not be

any thrill, and the cyst will not be movable. A slight degree of fever is most likely to be present.

On pelvic examination it may be impossible to palpate the uterus apart from the tumour, which will be felt in one or other of the lateral fornices, and perhaps extending into the pouch of Douglas. With the internal finger on the cervix, it may be possible by pressure transmission with the hand on the abdomen to feel the uterus separately (see pp. 206 and 224).

The fixity, the tenderness, the absence of a thrill, the close connection with the uterus and the history of a recent attack of acute inflammation, all suggest that the swelling is tubal in nature, though similar features are met with in certain cases of twisted or inflamed ovarian cysts.

HÆMATO-SALPINX AND HÆMATOCELE.—A hæmato-salpinx sufficiently large to cause an abdominal swelling is a rarity, and will, in most cases, be due to a tubal gestation, in which intra-tubal rupture has taken place. Far more commonly the abdominal swelling formed by a tubal gestation is due to a collection of blood extruded into the peritoneal cavity (see p. 136).

Very rarely large hæmato-salpinges arise from occlusion of some portion of the genital tract at or below the internal os, with a resulting accumulation of the menstrual flow, the lesion most often responsible being a congenital occlusion of the cervical canal. Such a condition would be suspected if, with a menstrual history in accordance with the above, there was present bilateral abdominal cystic swellings free of tenderness with no thrill, and a median cystic swelling dividing the two lateral ones, together with evidence of occlusion of the cervix on pelvic examination.

It may, however, be impossible to distinguish between the median swelling (hæmatometra) and those situated laterally.

HYDRONEPHROSIS.—A large hydronephrosis forms a cystic abdominal swelling which may extend downwards even to the brim of the pelvis, and thus in some respects may resemble an ovarian cyst. The difficulty of diagnosis depends a good deal on the size of the tumour, which only rarely reaches into the pelvis, so that in most cases there is a distinct area of resonance between the lower border of the cyst and the pubes, an unusual circumstance in an ovarian cyst. Then, as the kidney is retroperitoneal, the cyst will have the colon in front of it, and thus there is in nearly all cases well-marked resonance over it, which is one of the best and most certain signs of distinguishing a hydronephrosis from an ovarian cyst.

The exact degree of resonance of course depends upon how much gas there is in the colon, and it is conceivable that if the portion of this

intestine that runs across the tumour were empty there would be no resonance.

With regard to the position of the hydronephrosis, although, if very large, it may extend across the middle line, and in this respect exactly simulate an ovarian cyst, still, for the most part, these tumours are situated well in the loin, and can be grasped with one hand in front and one behind. When held in this position a hydronephrosis may sometimes be noted to descend a little with inspiration and rise again on expiration, a sign which is never present with an ovarian cyst, neither is it possible to grasp the latter in the manner just described. When sufficiently large, a cyst of this description may fluctuate, but very rarely can a thrill be obtained, neither is the outline of the swelling so well delineated as that of an ovarian cyst.

The history in these cases is not of much service. If the hydronephrosis is due to a renal calculus (which is rare, most of them being due to kinkage of the ureter), the patient may have had attacks of renal colic ; and if it be intermittent, the patient may give a history of a sudden discharge of a large quantity of urine, followed by a diminution in the size of the swelling. Symptoms such as these would point strongly to some disorder of the kidney, though sudden disappearance of the tumour is sometimes seen with thin-walled ovarian cysts, which may spontaneously rupture.

An examination of the urine will fail to give any clue, since only that secreted by the healthy kidney will be available, whilst the quantity passed is normal, as the unaffected kidney will be performing the work of both.

If the abdominal swelling is very large, and yet the menstrual function and the general health of the patient is not interfered with, such facts point to the swelling being a hydronephrosis, since ovarian cysts, when they become very large, are apt to interfere with the general health of the patient, and amenorrhœa commonly results.

If, on pelvic examination, the ovaries can be felt distinct from the abdominal swelling, this settles the diagnosis as far as an ovarian cyst is concerned, but this is not always possible, especially when the hydronephrosis extends to the pelvis.

Taking one case with another, if the various points as here described are carefully inquired into, a correct diagnosis will probably be made.

If there is any doubt, important information may be gained by catheterizing the two ureters, so that the urine flowing from each kidney can be collected, when, in the case of a hydronephrosis, it will be noted that urine is not flowing from the ureter corresponding to the diseased kidney.

PYONEPHROSIS.—The history of a patient suffering from a pyonephrosis

may be of considerable assistance in diagnosis, for she may have had several attacks of renal cystitis or pyelitis during or after pregnancy, or she may have tubercle. The patient is extremely ill with high septic fever, and complains of pain in the loin on the side of the lesion. The local examination will correspond more or less to that already given for a hydronephrosis, but, in addition, much tenderness is present. The swelling is less defined on account of the tenderness and rigidity.

An examination of the urine will disclose pus cells or perhaps tubercle bacilli. A cystoscopic examination would show which ureter was obstructed, or tubercular ulceration of the bladder or diffuse cystitis may be seen.

CYSTIC GALL BLADDER.—If the duct of the gall bladder is obstructed it may form a large cyst extending towards the pelvis. This cyst may have certain characteristics of an ovarian tumour, such as a dull note on percussion and fluctuation, but it is situated more laterally ; and what is of much greater importance, its dulness extends into that of the liver, the cyst disappears under the costal edge and descends and ascends on respiration.

If the appearance of the swelling has been preceded by attacks of biliary colic, and perhaps of jaundice, these points would be in favour of a diagnosis of cystic gall bladder, although there is no reason why a woman should not suffer from gall stones and have an ovarian cyst as well. The ovaries may be felt apart from the swelling.

The remaining abdominal cystic swellings that may be confounded with an ovarian cyst are more or less rare. Mesenteric cysts, pancreatic cysts, splenic cysts, hydatid cysts are rarely met with forming abdominal swellings. A few points about each must be mentioned.

HYDATID CYSTS.—Hydatid cysts may occur in the ovary, in the uterine tube, the broad ligaments, or other cellular tissue of the pelvis. They are often multiple. Hydatid cysts of the liver will also at times reach as far as the pelvis.

The history may be of importance, the patient having lived in a country (such as Australia) where hydatid disease is very common.

A hydatid cyst, when large, has many of the attributes of an ovarian cyst, and when connected with the pelvis or genital organs a certain diagnosis, short of abdominal section, is practically impossible.

A hydatid cyst of the liver can be diagnosed with more certainty since its dulness is continuous with that of the liver, its growth increases downwards, and there is generally an area of resonance between it and the pelvis. On percussion also a peculiar fremitus can sometimes be obtained.

Hydatid cysts of the pelvis, if not attended to surgically, have a tendency to burst into the rectum, bladder, or vagina, and often suppurate.

If some of the discharge is examined, the presence of daughter cysts or hooklets may be discovered.

RETRO-PERITONEAL CYSTS.—Mesenteric and omental cysts may occupy various positions in the abdomen, but they do not extend into the pelvis, and, on pelvic examination, the ovaries may be able to be palpated as healthy. Omental cysts are extremely movable and always dull on percussion. Mesenteric cysts are often partly resonant because the intestine overlies them. They may be movable when small, but when large become fixed.

PANCREATIC CYSTS.—These cysts appear in the epigastric region. The information obtained on percussion varies a good deal according to the direction of the growth. Most of the area of the tumour is resonant because the intestines overlie it. Such a cyst is fixed, grows slowly as a rule, and is painless. A variety of pancreatic cyst may follow an abdominal injury.

FAT.—Obesity with flatulent distension may in some women simulate a cystic ovarian tumour, and apart from an examination under deep anæsthesia it may be impossible to satisfy the patient or oneself of the absence of an ovarian cyst.

In such a condition as this one must remember that although the apparent cyst seems fairly large there is no satisfactory fluctuation through it and no thrill; that on deep percussion there is a definite amount of resonance, and that the resonance over the rest of the abdomen and in the flanks is of a similar character. There is no shifting dulness, no tenderness, and on pelvic examination the uterus may be detected bimanually (the obesity will often prevent this in the absence of an anæsthetic), or at any rate on rocking and weighing the uterus it appears to be of its ordinary weight and size. There will be evidence of obesity elsewhere. Examination under an anæsthetic will clear the diagnosis in difficult cases.

OVARIAN CYSTS COEXISTENT WITH OTHER CYSTIC SWELLINGS.

In dealing with an abdominal swelling from the point of view of it being an ovarian cyst, we have first of all described the typical attributes of these growths. Secondly, we have pointed out how some of the cardinal signs of an ovarian cyst may be absent, and yet the mass be of this nature. Thirdly, we have compared an ovarian cyst with other common and rare cysts, that may be found in the abdomen ; and, lastly, we shall draw attention to the fact that a further difficulty may arise if the ovarian cyst is complicated with some other cystic abdominal swelling.

In this connection we must consider the case of an ovarian cyst with

pregnancy, with a cystic tumour of the uterus, with a cyst in its fellow-ovary, and with a hydronephrosis, or some other abdominal cyst.

OVARIAN CYST AND PREGNANCY.—This has been fully dealt with on pages 137, 138. The difficulty in diagnosis is more likely to occur if the pregnancy is complicated with hydramnios.

OVARIAN CYST AND A CYSTIC TUMOUR OF THE UTERUS.—It may be possible to separate these two cysts bimanually, and on percussion there may be an area of resonance between them. The sound in most cases of fibro-cystic degeneration will pass into the uterus farther than normal, whilst in cases of hæmatometra and pyometra the sound will not enter at all, and the menstrual history will indicate the condition. If, however, the ovarian cyst was adherent to the uterine cyst, there would obviously be a great difficulty in exactly diagnosing the condition.

DOUBLE OVARIAN CYSTS.—Except as an exercise of one's clinical dexterity, the diagnosis of a double ovarian cyst is not of any special significance, since if one only is diagnosed, both can be removed at the same operation. Such a diagnosis might conceivably be of service in the case of a patient who refused to have both ovaries removed, even if both were diseased.

If the two cysts were of any size they would probably be touching one another and might even be adherent. If they were small they might be independently identified with an area of resonance between them.

OVARIAN CYST COMPLICATED BY ONE OF THE RARER ABDOMINAL CYSTS.—With regard to the diagnosis of an ovarian cyst complicated by one of the rarer abdominal cysts mentioned, it may be stated that accuracy is impossible.

OVARIAN CYST COEXISTENT WITH A UTERINE FIBROID.

This is a very common combination, and it may be impossible to distinguish the two tumours separately. In general, however, the difference in the consistence of the two tumours is sufficient to allow of an accurate diagnosis, the fibroid being solid and the ovarian tumour cystic. The continuity of the solid mass with the uterus is usually obvious, and it is to be remembered that ovarian cysts only rarely cause menorrhagia.

THE DIAGNOSIS OF CERTAIN COMPLICATIONS AFFECTING OVARIAN CYSTS.

The complications which ovarian cysts are subject to are those of twisting of the pedicle, inflammation, hæmorrhage, and rupture.

AXIAL ROTATION OF THE PEDICLE.—Why an ovarian cyst should become twisted on its pedicle it is impossible to say. Various reasons have been given, such as manipulations, the alternate emptying and filling of the rectum and bladder, unequal growth of the tumour, incarceration under the sacral promontory, and the presence of some other tumour.

The pedicle of an ovarian cyst contains, among other structures, the ovarian artery and vein, and it depends upon the tightness of the twist whether one or both of these vessels are occluded.

If we take the rarer case first, in which both vessels are occluded, a certain amount of necrosis of the tumour occurs, and adhesions are formed between it and other viscera in its neighbourhood, with the result that it gets a new blood supply, its pedicle necroses, and the tumour is found attached to some other organ.

This can only occur with small cysts, and is accompanied by a certain amount of pain in the region thereof.

In nearly every case the ovarian veins are alone blocked. In this case the blood is pumped into the cyst, through the ovarian arteries, and, being unable to escape by the veins, great congestion at once results. Small veins and capillaries in the walls of the cyst rupture, so that the cyst wall becomes infiltrated with blood and assumes the various hues common to extravasated blood. Veins and capillaries on the inner lining of the cyst may also rupture, and blood escape into the cyst cavity, colouring its fluid, and rarely a large vessel may rupture, causing severe and even fatal internal hæmorrhage.

The symptoms and signs of this common variety of acute axial rotation of the pedicle are in most cases very distinct. The patient is seized with a severe pain which, in the first instance, is due to the vascular engorgement of the tumour. If the tumour is now examined it is found to be tense and tender.

If the patient knows she has a tumour, the practitioner will most likely be summoned forthwith. On occasion events may proceed much further before she summons her medical attendant.

Following the congestion of the cyst, inflammation of its wall now occurs, due to the invasion of the bacillus coli. The patient will complain of increased pain, and gradually the symptoms of fever will supervene, whilst she will be unable to bear the least pressure on her abdomen, and so keeps to her bed, and often reclines in a semi-sitting position to prevent the parietal muscles pressing on the tumour. If the patient still neglects to send for medical assistance, vomiting will ensue, and other indications of peritonitis supervene.

It depends upon when the practitioner is called in what signs he discovers on his arrival. In a case that has been very much neglected, he will perhaps not be able to make a definite diagnosis, as by this time

peritonitis will have supervened, and the abdominal muscles will be held so rigidly that it may be impossible to feel the tumour. There will be very marked tenderness of the abdomen, signs of fever will be present, and with the history of vomiting and constipation, a diagnosis of intestinal obstruction may be made (see p. 77).

If the case is seen earlier, the presence of a tumour having the characteristics of an ovarian cyst, but tender, together with signs of fever, may be detected.

HÆMORRHAGE INTO THE CYST.—Hæmorrhage into the cyst is generally due to congestion from a twisted pedicle, and the resulting loss is only small, although occasionally a fatal amount has escaped from the vessels.

Hæmorrhage may also be due to ulceration into a vessel in the case of a suppurating cyst, or to a new growth. Hæmorrhage may also take place from the cyst if it is ruptured.

The symptoms and signs of hæmorrhage into or from an ovarian cyst are similar to those of hæmorrhage elsewhere, and will vary according to the amount lost and whether the blood is escaping into the peritoneal cavity or into the cavity of the cyst ; in the latter case they are at first not so marked.

With regard to the tumour itself, if the hæmorrhage is due to rupture, the cyst, if known to be present, will have disappeared, whilst if the bleeding is taking place into the cavity of the cyst, the cyst will become more tense and tender.

INFLAMMATION.—There are many ways by which an ovarian tumour may become inflamed, the commonest being partial twisting of its pedicle, the symptoms of which are not so marked as to cause immediate operative interference. In these cases adhesions form between the cyst wall, parietes, and neighbouring viscera, and may lead to great or insuperable difficulties later, when removal of the tumour is being attempted.

Apart from this, an ovarian cyst may become infected by the b. coli, typhoid bacillus, or other organisms migrating from the intestine through the bowel, uterine tube, or vermiform process, or as the result of pressure during pregnancy or labour.

Of the different varieties of ovarian cyst a dermoid is the most likely to become inflamed.

Inflammation of an ovarian cyst is usually associated with great abdominal pain. The constitutional signs of sepsis are present, whilst locally the tumour is very tender and tense. If the condition advances before assistance is summoned, or if the actual state of affairs is not diagnosed, the patient gradually assumes a condition more or less approaching that of the typhoid state, and, in fact, such a condition has often been diagnosed as enteric fever.

We have known a case of prolonged suppuration in a dermoid cyst eventually rupturing through the navel, diagnosed and treated by eminent medical men as tuberculous peritonitis, whilst many a woman has died with the diagnosis of puerperal fever from a suppurating ovarian cyst. Such a condition must, therefore, particularly be thought of when dealing with a case of sepsis after labour.

An inflamed ovarian cyst may give rise to local or general peritonitis ; or suppurating, and becoming adherent to some viscus, the pus may escape through the bowel, bladder, vagina, or abdominal parietes.

RUPTURE.—An ovarian cyst may rupture as the result of excessive growth, of manipulation during examination, of destruction of a portion of its wall by suppuration, of perforation of its wall by papillomatous or carcinomatous growth. It may also rupture as the result of a fall, blow, or excessive coughing, or from pressure during labour.

The symptoms, signs, and results of a rupture depend upon the nature of the cyst, and also whether any hæmorrhage results, or whether there has been suppuration. If any serious hæmorrhage results, the symptoms and signs will be those already given under this heading. Classifying ovarian cysts according to the nature of their contained fluid, which, from the point of view we are now discussing, is the best, we find such cysts may contain a clear watery fluid (simple ovarian and parovarian cysts) ; thick, stringy, mucous, or colloid fluid (glandular ovarian cysts) ; liquid fat, and sometimes, in addition, hair, bone, teeth, etc. (dermoid cysts) ; and clear watery fluid, with papillomatous growths (innocent and malignant papilliferous cysts).

Simple Ovarian and Parovarian Cysts.—A small, simple ovarian cyst or a parovarian cyst may rupture without producing any serious results, and, in the case of the latter cyst, diuresis may follow, and the patient have an attack of urticaria.

Glandular Cysts.—The mucous fluid escapes into the peritoneal cavity, but is not absorbed. Following the rupture, the glandular lining of the cyst continues to secrete fluid which, escaping through the rent in the cyst wall, gradually accumulates in the abdominal cavity, eventually, if the cyst is not removed, distending it to an enormous size. The presence of the fluid does not cause any particular inconvenience, except that of pressure and increased girth. Occasionally, however, some of the colloid-forming cells that line the cyst proliferate into the peritoneum until this membrane is diffusely covered by a soft reddish tissue from which a colloidal substance resembling painter's " size " is continually formed (" Pseudo-myxoma peritonei ").

Dermoid Cyst.—The contents of a dermoid cyst are very irritating and give rise to peritonitis.

Papilliferous Cyst.—The papillomatous growths that escape through

the rent in the wall when these cysts rupture are countless in number. They become adherent to the viscera and parietal peritoneum, and by their irritation cause the peritoneum to secrete a watery fluid. This fluid collects to a great amount.

The symptoms and signs depend partly on the pressure of the free fluid (the clinical signs of ascites with a cystic tumour make it almost certain that this tumour is an ovarian cyst of papilliferous origin), and partly on the extension of the growth. If the papillomata are malignant in nature they will form masses involving the bladder, rectum, uterus, omentum, and intestine. Two-thirds of these papilliferous cysts are malignant (see p. 188).

If a suppurating cyst ruptures into the peritoneal cavity peritonitis results. If it has already become adherent to some hollow viscus the pus will escape by that channel (see also p. 70).

FIBROID TUMOUR OF THE UTERUS.

The commonest solid abdominal tumour to be found in a woman is a fibroid of the uterus.

If we take a typical case we shall find that the patient is 40 years of age or over, has not had any children, and for some years has had an increase in the amount of her periods. She may have noted an abdominal swelling which she describes as hard, growing very slowly, and devoid of pain. She may or may not have had trouble on micturition (frequency or difficulty) or on defæcation.

On abdominal examination, the abdomen may be seen to be somewhat distended with a regular or irregular tumour centrally situated. This position will be confirmed on palpation, when the tumour will be found to be hard, smooth, or nodular in contour (Fig. 66), not tender, dull on percussion, without fluctuation or thrill, and perhaps yielding a souffle on auscultation.

On pelvic examination the uterus is found to be markedly enlarged and hard. The cervix will be hard, and any movements applied to the abdominal swelling will be communicated to it; the ovaries will be found to be normal and free of the tumour, and if it is thought necessary to pass a sound, this instrument will enter beyond the normal distance.

Such are the typical features of a fibroid tumour of the uterus, and we shall now discuss the conditions in which one or more of these may be absent and yet the tumour be a uterine fibroid.

FEATURES RENDERING THE DIAGNOSIS OF A UTERINE FIBROID DIFFICULT.

MULTIPLE FIBROIDS.—Fibroids are usually multiple, more than a hundred having been found in a single uterus. When several sub-

peritoneal fibroids are present, especially if they be pedunculated, palpation of the abdomen will reveal a number of apparently separate tumours. Since not more than two ovarian tumours can be present together, the fact of finding in the abdomen a still larger number of masses argues that the condition is partly if not entirely due to fibroids of the uterus (Fig. 67).

CERVICAL FIBROIDS.—When a fibroid grows in the supra-vaginal cervix it expands that structure over it like a capsule and lifts the body of the uterus upwards, so that it forms a relatively small projection perched
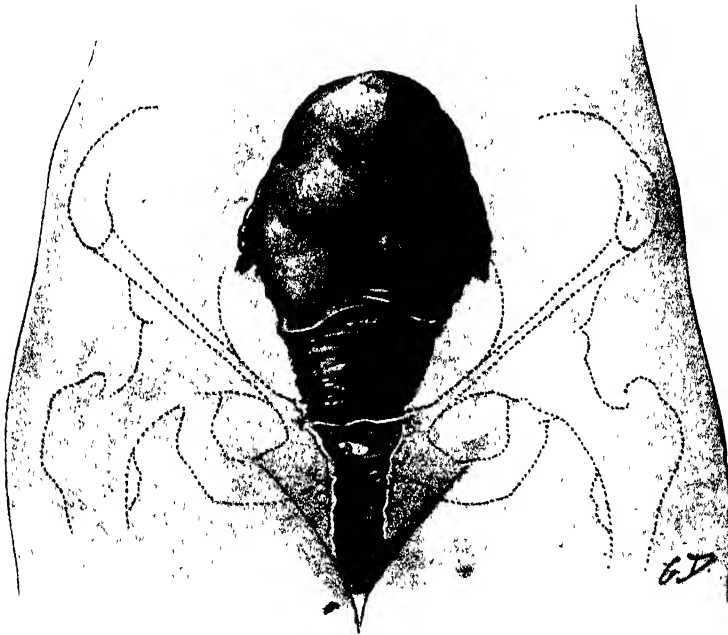
FIG. 66.—MULTIPLE CORPOREAL FIBROIDS.

on the main mass. This variety of fibroid feels extremely fixed on abdominal examination, and percussion may yield a resonant note over it (see p. 22). On vaginal examination the cervix is spread out like that of later pregnancy, but differs from it in being very tense and fixed (Fig. 68).

TUMOUR WHICH FEELS SEPARATE FROM THE UTERUS.—In the case of a sub-peritoneal fibroid with a pedicle, the tumour on palpation may appear to be separate from the uterus, and in this case resembles a solid ovarian tumour (Fig. 69). The differential diagnosis between the two conditions is discussed on page 178.

FIBROID TUMOURS IN WOMEN WHO HAVE HAD CHILDREN.—A history of sterility, though common, is not invariable, since women with fibroids have not infrequently conceived and borne children, most commonly before the fibroid has developed. It may be roughly stated that the liability to these tumours is in an inverse proportion to the number of children the woman has borne. The presence of fibroids is a cause of repeated miscarriage.

NORMAL MENSTRUATION OR AMENORRHŒA PRESENT WITH A FIBROID.
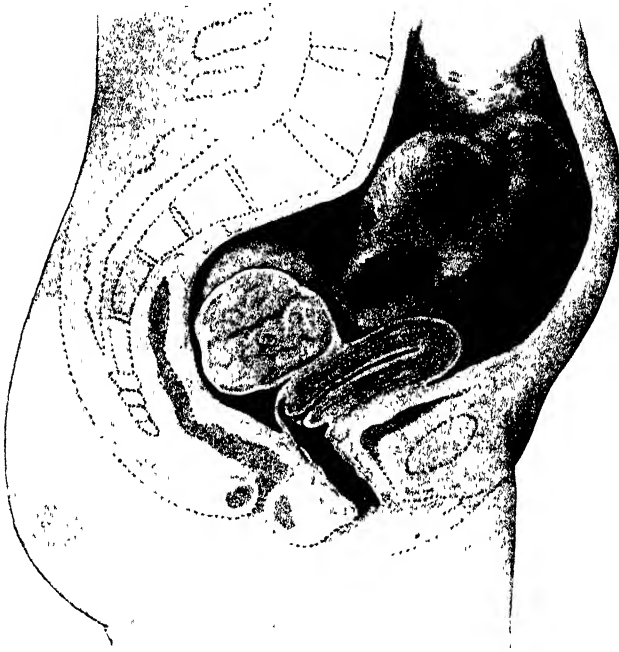
FIG. 67.—MULTIPLE FIBROIDS.

—If the fibroid is sub-peritoneal only, menstruation is normal or the patient may even have some illness causing amenorrhœa, though for a fibroid to be associated with absence of the periods, except because the woman is pregnant or past the menopause, is extremely rare.

FIBROIDS IN WOMEN UNDER 30.—Fibroids are rare in women under 30 years of age, and extremely rare in those under 20—in fact, it would be well in such a case as the latter to procure the birth certificate to ensure that the patient's estimate of her age is correct. Though fibroids

have been removed from girls under 20 years of age, and even as young as 14, the great probability is that a solid abdominal swelling under 25 years of age is not due to a fibroid.

VARIATIONS IN CONSISTENCE.—The typical fibroid should be quite hard. The more fibrous tissue these tumours contain the harder they are. Still more is this the case when they have undergone calcareous degeneration. Many secondary changes in fibroids, such as red de-

FIG. 68.—INTERSTITIAL CERVICAL FIBROID.

generation, cystic degeneration, and œdema, make them soft. Pregnancy has a similar effect. Thus a fibroid may become so soft as to be mistaken for a cyst.

FIBROIDS THAT GROW QUICKLY.—The usual rate of growth of fibroids is often very slow, so that no appreciable difference may be noted in them for a year or more. If, therefore, a solid abdominal tumour is increasing in size quickly, the probability is that it is either not a fibroid or that, being one, some abnormal change is occurring therein ; thus the

size of a fibroid will distinctly increase within a short space of time if
the tumour is undergoing cystic or sarcomatous degeneration, and also,
though to a much smaller extent, with red degeneration and œdema.

FIBROIDS AND PAIN.—As a rule fibroids do not cause any pain.
Pain may arise if the tumour by its weight or position (impaction) is
pressing on the nerves of the pelvis, if it is undergoing sarcomatous
degeneration, red degeneration, cystic degeneration, when the pedicle of
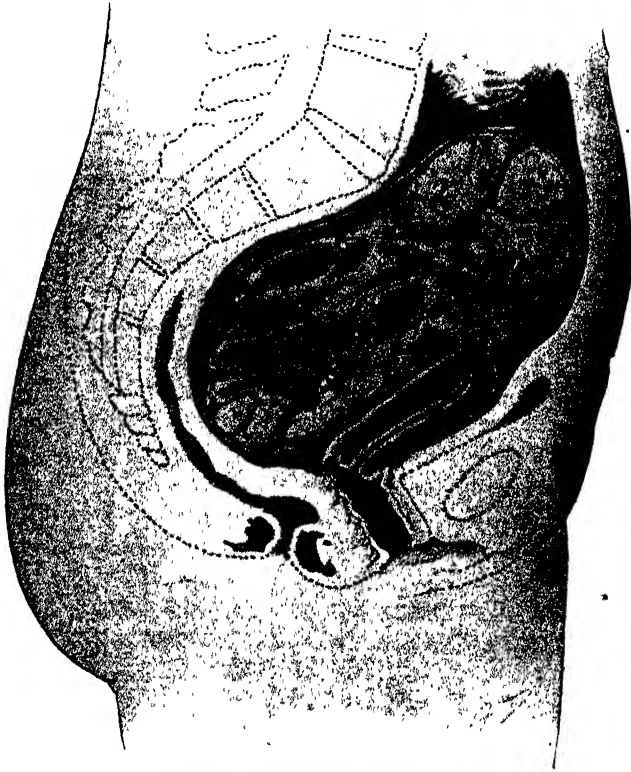
FIG. 69.—PEDUNCULATED FIBROID.

a sub-peritoneal fibroid becomes twisted, or, as very rarely happens, the
uterus itself becomes axially rotated.

The practitioner must further remember that pain in a fibroid may
signify the presence of some other disease, such as salpingitis, an ovarian
cyst, appendicitis, carcinomatous infiltration—in short, the association
of pain with a fibroid indicates some added condition.

FIBROIDS AND TENDERNESS.—The preceding remarks apply equally
to tenderness, since, as a rule, fibroids are not tender, and the presence
of this sign is an indication of some degeneration in the tumour

or some associated disease, such as those mentioned in the preceding paragraph.

FIBROIDS WITH A UTERINE CAVITY NOT ENLARGED OR LESS THAN NORMAL.—If sub-peritoneal fibroids are alone present, the length of the cavity of the uterus is not increased in size, and after the menopause it may show the normal decrease.

CERTAIN SYMPTOMS AND PHYSICAL SIGNS FALSELY SUGGESTING FIBROIDS.

We must now discuss certain of the symptoms and signs we have noted as accompanying fibroids which may be present with other conditions.

UTERINE HÆMORRHAGE.—It will not be necessary to discuss here all the causes of uterine hæmorrhage, but only those being accompanied by an abdominal swelling which might be mistaken for a fibroid. The solid ovarian tumours and certain ovarian cysts which have a solid or semi-solid feel may at times cause an increased loss (see p. 175), or such conditions may coincidently be associated with endometritis or mucous polypi (see p. 194). Again, a uterus sufficiently enlarged by carcinoma or sarcoma to be mistaken for a fibroid would give rise to abnormal bleeding.

NODULAR CONTOUR OF THE UTERUS IN THE ABSENCE OF A FIBROID.— If a malignant growth perforates the uterus it gives it a nodular feel. Thickened and diseased uterine tubes may also be adherent to the uterus, and so cause it to have an irregular surface.

UTERINE SOUFFLE IN THE ABSENCE OF A FIBROID.—Most typically the uterine souffle is associated with pregnancy, and if the pregnancy chances to be abnormal (carneous mole) the uterus in its consistence may resemble a fibroid. Such a diagnosis has often been made under these conditions.

INCREASED SIZE OF THE UTERUS IN THE ABSENCE OF A FIBROID.— If the uterus has enlarged sufficiently to be felt as a solid abdominal swelling, the condition is usually due to a fibroid. Enlargement of the uterus may, however, be due to one of the following causes : adeno-myoma, normal pregnancy, extra-uterine pregnancy, carneous mole, vesicular degeneration of the chorion. carcinoma and sarcoma of the body of the uterus and of the cervix, pyometra, hæmatometra. It is impossible clinically to diagnose an adeno-myoma of the uterus from a fibroid. The diagnosis of the remaining conditions will be discussed under their respective headings.

The difficulty in diagnosing fibroids does not end with the fact that some of their distinctive symptoms and signs may be absent or be mimicked by other diseases, since there are other solid, or apparently solid,

abdominal swellings which, in certain respects, simulate fibroids and from which they have to be diagnosed, and these we will now discuss.

Pregnancy.—When there is a deficiency of liquor amnii in the uterus pregnancy may present itself as a more or less solid-feeling tumour. The other signs of pregnancy will, however, be present, and fœtal movements and fœtal heart sounds if the child is alive should be detected more easily. The diagnosis is fully discussed on p. 131.

Extra-uterine Gestation.—Pregnancy outside the uterus may simulate a uterine fibroid in several ways. Thus an old-standing hæmato-salpinx hæmatocele, or hæmatoma has often a very solid feel and appears to be one with the uterus. The short history of the illness and the symptoms are unlike those one usually finds in the case of a fibroid.

When extra-uterine pregnancy proceeds to the later months the mass formed may be mistaken for a fibroid growing from the uterus, and this is particularly likely to be the case in long-sequestered extra-uterine pregnancy where the child is dead and perhaps calcified, and the history of the appearance of the swelling is perhaps enshrouded in doubt and forgetfulness (see p. 136).

Vesicular Degeneration of the Chorion.—A vesicular mole enlarges the uterus and gives it a semi-solid feel. The uterine swelling is painless, movable, and the condition is associated with irregular and often excessive bleeding. So far, therefore, if the practitioner sees such a patient for the first time the local signs may suggest a soft fibroid (see p. 136).

On inquiring into the history he may find that the age of the patient is well below that at which one usually expects fibroids to appear, while menstruation may have been normal up till the time the irregular losses occurred, or the patient may have missed one or two periods.

The size of the uterus will vary ; in some cases when the intra-uterine hæmorrhage from the mole is not marked the uterus may be enlarged very little more than might be expected, assuming the patient to be normally pregnant.

On the other hand, in some cases the increase in size is marked, owing to the amount of blood being retained and the rapid proliferation of the chorionic villi.

The diagnosis is easier in these latter cases, since no fibroid ever enlarges at this rate, whilst pain is a very marked symptom.

If the uterus is markedly enlarged and the patient has suffered from menorrhagia or irregular bleeding for some considerable time, the probabilities are in favour of a fibroid, for the history of vesicular mole is usually a short one. On the other hand, cases sometimes occur in which the formation of a vesicular mole is superimposed on some precedent condition which also gave rise to irregular hæmorrhage. The diagnosis in such a case may be impossible until the uterus empties itself or is emptied.

Certain signs of pregnancy, such as the uterine souffle, breast signs, softening of the cervix, and perhaps intermittent uterine contractions, may be of assistance as favouring pregnancy, although all may occur with a fibroid of the uterus.

Carneous Mole.—With a carneous mole the uterus is enlarged generally to about a three months' pregnancy. It is smooth in contour, semi-solid in consistence, and quite hard if an intermittent uterine contraction happens to occur during palpation. The irregular hæmorrhage that after a while accompanies the condition further enhances the resemblance to a fibroid. On pelvic examination the abdominal swelling is found to be the uterus.

Such a mistake is more likely to be made if the patient, before she conceived, suffered from menorrhagia (see p. 186).

As a means of distinguishing the two we have the fact that, in most cases, there was one, two, or three months' amenorrhœa preceding the irregular losses, that certain breast signs are or were present, and that the cervix is softened. The age of the patient may also form a useful guide, and if the diagnosis is of extreme importance the cervix can be dilated and the diagnosis then completed. Otherwise a definite opinion can be postponed for a few weeks, when the uterus will empty itself.

The passage of a sound will not give much information, since in both cases the length of the cavity is increased and the resistance of a submucous fibroid might easily simulate that of a carneous mole.

Carcinoma of the Body of the Uterus.—Carcinoma of the body of the uterus will in some cases form a solid abdominal swelling. It may be nodular in contour, owing to the cancer involving the outer surface, movable, and not tender to the touch. It is also associated with irregular or continuous hæmorrhage. The woman will be over 40, and often sterile. In these respects, therefore, carcinoma of the body may closely resemble a fibroid tumour of the uterus (see p. 196).

In addition, however, we find that when the uterus is large enough to form an abdominal swelling pain is complained of ; there is an offensive discharge, and wasting and general deterioration in health.

Now a fibroid giving these latter symptoms is either the seat of septic infection or of malignant degeneration or infiltration.

With a septic fibroid, however, although it may cause pain and give rise to offensive discharge, yet the short history, the signs of septic infection of the patient, such as high temperature, quick pulse, and general malaise that are present, are usually sufficient to distinguish the condition from malignant disease, in which such acute symptoms are generally absent.

On the other hand, with malignant disease in a uterus with a fibroid, the dual nature of the conditions may very readily be overlooked, the tendency being to diagnose it either as a submucous fibroid undergoing

acute degeneration and softening, or to regard the whole enlargement of the uterus as being due to malignant disease.

There are thus two points of great importance in the diagnosis : the larger the tumour and the more irregular its outline, the more likely it is to be in the whole or part a fibroid ; whilst the smoother the outline and the longer the time that has elapsed since the menopause, the more likely is it that the tumour is solely due to carcinoma (cp. Figs. 70 and 71).

The older the patient the greater the chance of carcinoma.

Carcinoma of the Cervix.—In some cases of endo-cervical carcinoma the uterus is enlarged by growth or retained pus, so that it may be palpated on abdominal examination (Fig. 72). Such a condition has often been mis-
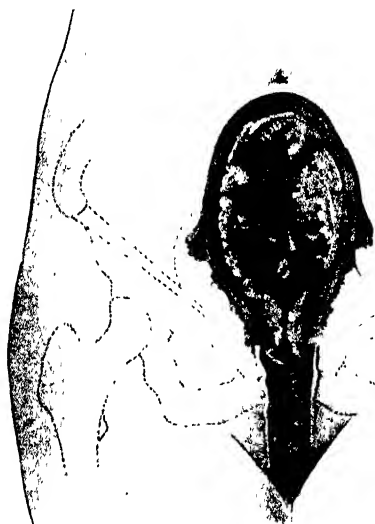
FIG. 70 —FUNGATING CORPOREAL CARCINOMA.

taken for a fibroid polypus of the uterus which has become septic because, in both, the uterus is enlarged, there is excessive and irregular loss, and an offensive discharge. Pain may be present in both. The age also is in favour of both conditions, since cancer of the cervix is most common at or about the age of 43. The fecundity of the patient is a small point, but may be noted, since whereas malignant disease of the cervix occurs almost exclusively in women who have had children (single patients thus affected will most often be found to have had illegitimate children), fibroids are often associated with sterility.

The local examination, however, of the presenting tumour should easily settle the question of the diagnosis. The fibroid polypus will be hard, the cancer friable ; the polypus will not bleed appreciably on being

touched, the cancer will likely bleed profusely ; the polypus can be found with the aid of the sound to be free of the cervix, whilst the cancer will be found to be growing from the cervix.　Lastly, if after this examination the practitioner is still uncertain, he can remove a piece of the tumour and have it microscopically examined (see pp. 244 and 247).

Exceptionally, as the result of carcinoma of the cervix, a large mass is formed, the result of a cancerous parametritis.

Pyometra and Hæmatometra. — Although we have already noted that these conditions may form cystic abdominal swellings and so simulate, in some respects, ovarian cysts, they may feel more solid (see p. 150).

FIG. 71.—CORPOREAL CARCINOMA IN A MYOMATOUS UTERUS.

It is not at all likely that any mistake would be made with a hæmato-metra, since the menstrual history of these cases is so very distinctive.

A pyometra, however, especially after the menopause, might resemble, in many respects, a sloughing fibroid, and indeed the two conditions are frequently combined.

Extra-uterine Tumours and Swellings simulating Fibroids.—The follow-ing extra-uterine tumours may simulate fibroids, namely, pelvic cellulitis, pelvic peritonitis, tumours of the ovary, broad ligament, tube, liver, spleen, kidney, omentum, mesentery and intestine, and a desmoid tumour of the abdominal parietes.

Pelvic Cellulitis.—Pelvic cellulitis forms most usually a hard mass in one or other broad ligament, but occasionally it is situated in front or

behind the uterus ; it may therefore be mistaken for a lateral fibroid growing into the broad ligament or a fibroid on the anterior or posterior wall of the uterus (see pp. 202 and 205).

The history in such a case is of great importance, since there must have been some cause for the cellulitis, generally sepsis after labour or abortion, associated with a more or less acute illness accompanied by severe abdominal pain and the symptoms of fever.
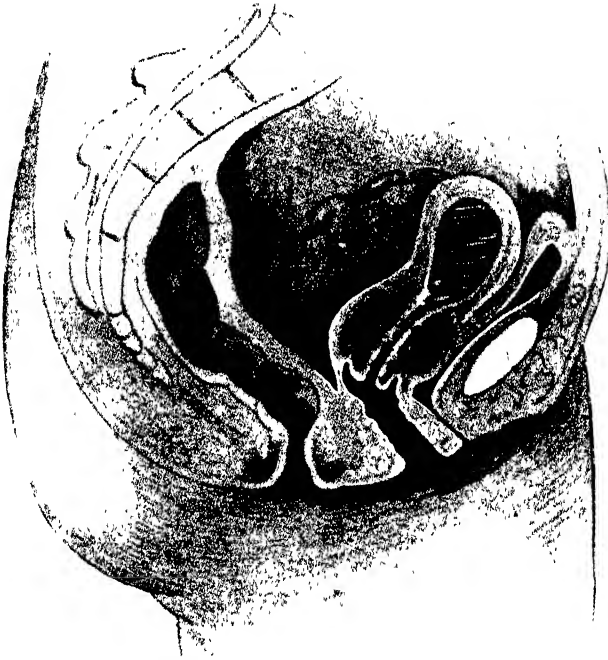
FIG. 72.—PYOMETRA SECONDARY TO ENDO-CERVICAL CARCINOMA THE ENLARGED CORPUS CAN BE FELT FROM THE ABDOMEN. (See also Fig 117.)

The signs of a typical attack of pelvic cellulitis after labour or abortion also are hardly likely to be mistaken for those of a fibroid, since the swelling takes a definite dome shape, rising up above the pelvic brim. It is fixed and very tender on palpation, whilst on pelvic examination the uterus is pushed over by the swelling to the opposite side, unless the attack is bilateral.

In rarer cases following early abortion or sepsis after operations, the effusion, instead of rising well up into the abdomen, keeps to the pelvis, and being also smaller resembles a fibroid more nearly.

In such cases, however, there will be a history of a cause followed by an acute onset, the patient will be ill, and the swelling will be tender. Difficulty may present itself when septic changes have taken place in a fibroid producing somewhat similar symptoms and signs, or, again, pelvic peritonitis may ensue in the neighbourhood of a fibroid, fix it, and then with the general and local signs of inflammation, pelvic cellulitis will be mimicked.

As a rule no such difficulty presents itself, since a fibroid is not tender, is movable, does not cause any general symptoms, and has a menstrual history that is suggestive, while its contour is much more definite than that of cellulitis.

A mass, if due to cellulitis, will eventually clear up with absorption or suppuration and discharge.

Pelvic Peritonitis. — Pelvic peritonitis may form a central solid fixed abdominal swelling which is tender to the touch and more or less dull on percussion. The contour of the swelling is not at all well defined. The abdominal portion of the swelling is a conglomerate consisting, besides the part primarily inflamed, of matted omentum and intestine.

On pelvic examination the uterus is found to be fixed and pushed forwards, whilst the pouch of Douglas is filled with a swelling (see pp. 208, 224). There is a history of recent childbirth, abortion, gonorrhœal infection, or operation, or the patient may be known to have had previous inflammation of the uterine tubes or appendix, or to be the possessor of a pelvic neoplasm. With acute peritonitis the general condition of the patient is grave, the temperature and pulse-rate being much raised, while great abdominal pain is complained of.

The commonest cause of pelvic peritonitis, namely, salpingitis, may form a swelling which can often be palpated by the abdomen. This mass consists of an inflamed uterine tube, thickened intestine, adherent omentum, effused lymph, serum, and pus. The proportion of it formed by the uterine tube is variable ; if it is distended either by serum or pus it may constitute the major part of the swelling. In other cases, however, the tube though inflamed is but little thickened, and the mass is principally composed of thickened omentum and bowel, and with encysted pus or serum (see p. 185).

It is characteristic of such swellings that the pain precedes the formation of the tumour, which is not at first palpable, but becomes increasingly so as the days go by, whereas in inflammation of a pre-existing tumour the swelling was present from the very onset of the pain (see p. 67).

As has already been pointed out, the swelling due to salpingitis is partly resonant and often reaches the middle line of the abdomen, or if bilateral occupies the middle line. These features distinguish it from broad-ligament cellulitis, in which the swelling is markedly lateral and always dull (cp. Figs. 73 and 74).

Such a condition very closely resembles a degenerating fibroid of the uterus, which by causing pelvic peritonitis has fixed the uterus. In both instances the uterus will be fixed, and projecting from its surface will be a hard lump which, on palpation, is likely to be tender. In each case the patient will complain of pain and may have fever, whilst in both there may be a history of uterine hæmorrhage, due, in one case, to the fibroid, and in the other case, to septic endometritis (see pp. 53 and 57).

The history, however, in a case of salpingo-oophoritis of this type is usually that there have been one or more subsequent attacks of acute inflammation when the patient has had to keep to her bed, whereas with a fibroid the history of inflammation is shorter and recurrent attacks are unusual.
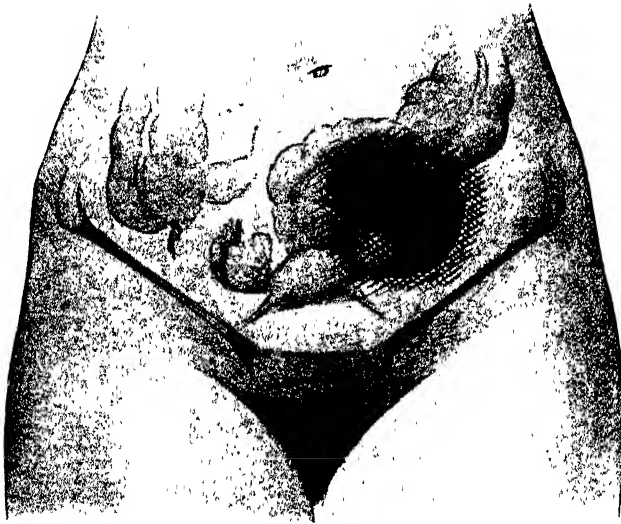
FIG. 73 —POSITION OF THE SWELLING CAUSED BY SALPINGITIS.

Solid Ovarian Tumours.—An ovarian cyst may be so fashioned that its anterior surface is made up of many small semi-solid loculi, which will give it a hard sensation on palpation and also a nodular contour. Being painless, if there is some local condition of the uterus causing uterine hæmorrhage, the tumour may be mistaken for a fibroid.

A pelvic examination will, in most cases, settle the diagnosis, since the uterus will be felt apart from the tumour. Again, if doubt still exists, a sound must be passed, when in a fibroid the cavity of the uterus will be found to be larger than normal. If, however, the fibroid is sub-peritoneal (a variety specially likely to be confused with an ovarian cyst), the cavity of the uterus is not lengthened. The age of the patient may be of some assistance.

Again, a dermoid which is semi-solid in nature, or a very tense cyst in an obese woman or one who holds herself very rigidly may give the sensation of a fibroid

Of the various solid abdominal swellings that are or may be mistaken for fibroids, solid ovarian tumours are the most likely.

Solid ovarian tumours are either innocent or malignant.   The former is a fibroma, and the latter a sarcoma or carcinoma, this last being sometimes secondary to carcinoma in the stomach or breast.   Solid tumours of the ovary generally remain undiscovered (except by accident) until they are large or the general health has been so depreciated that a routine examination is made to ascertain the cause.

FIG 74.—POSITION OF THE SWELLING CAUSED BY LATERAL CELLULITIS.

For diagnostic purposes we will divide these solid tumours into small and large, the latter with marked deterioration of health.

A small ovarian tumour may be found accidentally during a routine examination of the abdomen and pelvis for some vague pain or disturbance of menstruation.   It forms a smooth, hard swelling which is not tender, whilst its contour can easily be palpated, and on pelvic examination it is quite movable apart from the uterus.   The menstrual history may be deceptive ; thus there is no reason why a patient with a fibroma of the ovary should not also have fibroids in her uterus, in which case she would most likely have uterine hæmorrhage, whilst the presence of some of the fibroids, if they could be felt (sub-

peritoneal), would suggest very strongly that the solid ovarian was a sub-peritoneal fibroid with a long pedicle. *On the other hand, such a fibroid would feel like a solid ovarian, and could be moved just as well independently of the uterus, and would not interfere with normal menstruation any more than the ovarian tumour would.* The age, however, might be of great assistance in elucidating a diagnosis, for solid ovarian tumours can occur at all ages. A most important clinical sign differentiating a solid ovarian tumour from a fibroid is the presence of free fluid in the peritoneal cavity, with which the former is associated in 50 per cent. of the cases.

A very large solid tumour, with marked depreciation of health, lying adjacent to the uterus, is much more likely to be ovarian in nature than uterine, since, as a rule, sub-peritoneal tumours do not become very large, although occasionally notable exceptions are met with. The tumour may be a carcinoma of the ovary secondary to cancer of the stomach or breast, and an examination of these organs may detect the primary lesion, and so settle the diagnosis, although it is a fact that in many cases the primary lesion is overlooked.

Attention is not usually drawn to malignant solid ovarian tumours until after they have reached a certain size, when by the general failure in health of the patient, the pain and the abdominal enlargement, due not only to the tumour but also to ascites, and perhaps to secondary growths in the omentum, become marked (Fig. 75).

After such a tumour is discovered, if not at once removed, it will be noticed that it increases rapidly in size, wasting becomes marked, and there is œdema of the lower extremities from involvement of the pelvic or abdominal veins.

A uterine fibroid, on the other hand, usually takes some years to grow to a large size, and although it may increase somewhat rapidly in size with cystic degeneration or septic infection, yet it never does so at the rate that a malignant solid ovarian tumour does. Again, fibroids are usually painless, and although they may become painful (septic infection, perimetritis, red degeneration, carcinomatous infiltration, or sarcomatous degeneration), there are other signs which will be of help in arriving at a diagnosis.

Amenorrhœa, or scanty menstruation during the period of menstrual life, favours a diagnosis of solid ovarian tumours, as apart from the sub-peritoneal fibroid, the larger the tumour of the uterus the more likely will excessive and irregular menstruation result. After the menopause, however, hæmorrhage from the uterus is quite as likely to be due to malignant disease of the ovary as to a fibroid (see pp. 56 and 59). The age of the patient may be of some assistance, since, as we have remarked, under 30, fibroids of the uterus are very rare, whilst at, and after, the

menopause they are likely to become smaller, and therefore an enlarging tumour at this age is most commonly ovarian in origin. It must be remembered, however, that the secondary changes in uterine fibroids sometimes commence at the menopause. The presence of ascites makes

FIG 75.—MALIGNANT DISEASE BEGINNING IN THE OVARY, WITH SECONDARY MASSES IN THE OMENTUM AND PERITONEUM.

the diagnosis of an ovarian tumour nearly certain, since with a uterine fibroid it is extremely rare.

Finally, on pelvic examination it may be possible to feel the uterus distinctly apart from the tumour.

Broad-Ligament Cyst.—A broad-ligament cyst, if very tense, may simulate a fibroid of the broad ligament. They both form hard, painless

swellings by the side of the uterus, more or less limiting the mobility of this organ. A normal menstrual history is found with each, and it may be quite impossible to make a certain diagnosis. Broad-ligament fibroids, however, are much rarer than cysts in this situation, and if they grow to any large size the pressure effects will be much more severe with a solid tumour than with a cystic one.

Solid Tumour of the Liver.—A solid tumour of the liver may become very large, but there is always resonance between it and the pelvis, whilst the uterus can be palpated bimanually and found to be free of the tumour. A tumour of the liver would also move with respiration.

There is also a peculiar condition of the liver in which an additional lobe (Riedel's lobe) is formed and presents as a solid tumour in the right iliac region. It causes no trouble until the patient accidentally discovers it, when the worry connected with its presence may lead her to consult a doctor, who may find it very difficult to make a proper diagnosis. It is always situated on the right side, and much more likely to be mistaken for a renal tumour.

An examination of the pelvis will show that the uterus and ovaries are free of the tumour.

Solid Tumour of the Spleen.—A movable spleen, or an enlarged spleen due to malaria, leukæmia, or splenic anæmia, may extend as far as the pelvis, and might on a cursory examination simulate a large sub-peritoneal fibroid or solid ovarian tumour.

The source of such a tumour will, however, soon become apparent if the patient is carefully examined.

The abdominal swelling will be noticed to have a sharp edge and particularly a notch, and on percussion the splenic dulness will have shifted. The history may point to malaria, and an examination of the blood may give important information, whilst bimanually the uterus and ovaries will be free of the tumour.

Solid Tumour of the Kidney.—A solid tumour of the kidney may simulate a pedunculated fibroid tumour. The colon running across it makes it resonant in front, while there is marked pain in the loin and probably blood in the urine. A bimanual examination will discover the uterus and ovaries free.

Solid Tumour of the Omentum and Mesentery.—Solid tumours of the omentum or mesentery are not uncommon. When growing in the omentum they are usually malignant, the growth being as a rule secondary to a carcinoma elsewhere, especially in the ovary. When occurring in the mesentery they most often arise as the result of tuberculous disease of the mesenteric glands. In either case they are movable, sometimes very freely so. Omental tumours are usually bossy to the touch, present a sharp lower edge, and are dull on

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percussion. Mesenteric masses of glandular origin are rounder and usually resonant.

Such tumours, especially secondary omental carcinoma, are very often mistaken for fibroids, most particularly when the primary growth occupies the pelvis.

Fibrous Tumour of the Abdominal Wall (Desmoid Tumour).—These tumours are rare. They vary in size, and as a rule are not larger than a tangerine orange. They are painless, dull on percussion, and if the abdominal parietes are lax, they are apparently movable. We have known such a tumour to be mistaken on more than one occasion for a sub-peritoneal fibroid of the uterus, and as such a tumour does not alter menstruation the history of this function is of no assistance. A fibrous tumour of the abdominal wall feels very superficial, bimanually does not alter its position when the uterus is moved, and it becomes fixed when the abdominal muscles contract.

Malignant Disease of the Pelvic Colon or Cœcum.—Malignant disease in either of these situations forms a solid abdominal swelling which may be very difficult to diagnose. Till quite a late period of the growth intestinal symptoms may be absent (see pp. 231 and 286).

In many of the cases we have seen the condition has been diagnosed as due to a fibroid or diseased appendages, and as the growth is apt to become adherent to the uterus or broad ligament the reason for such a diagnosis becomes apparent. A history of tubal infection, however, is absent, and the menstrual history is normal. There is no tenderness on palpation, and the uterus and appendages may or may not be easily definable from the swelling (see p. 75).

Alternating diarrhœa and constipation with bloody stools and wasting would point strongly to the malignant nature of the disease. It occasionally happens that an abscess is formed round the malignant bowel, in which case a hard, tender, fixed swelling is found in one or other iliac fossa, giving rise to a diagnosis of pelvic cellulitis ; but the absence of all history pointing to a cellulitis, together with the deteriorated condition of the patient's health, and the fact that she gets worse, and the swelling becomes more marked instead of clearing up, may give the clue to the diagnosis, although this has often only become apparent on operative procedures being undertaken for its relief.

In many cases so closely does malignant disease of the bowel resemble disease of the uterus or its appendages that distinction is impossible, and the surgeon if he proposes to operate on the assumption that the condition is due to diseased appendages must be prepared to excise a portion of the bowel if it is malignant.

FIBROIDS COEXISTENT WITH OTHER ABDOMINAL TUMOURS.

The difficulties in diagnosing a fibroid of the uterus may be further enhanced in that it may be associated with pregnancy or some other abdominal tumour.

FIBROIDS OF THE UTERUS AND PREGNANCY.—The association of a fibroid of the uterus and pregnancy is not a particularly uncommon one, although the tumour is generally small and does not cause any trouble.

The ease with which such a combination can be diagnosed will depend somewhat on the time of pregnancy when the patient first comes under observation.

In the early months amenorrhœa, in a woman who has fibroids and has suffered from menorrhagia, is practically a certain indication that she is pregnant. In some cases a woman may have a fibroid of the uterus and menstruate normally. If such a one became pregnant the fact that the uterus was distinctly larger than the period of amenorrhœa warranted would be an indication that a fibroid was present in addition, although it must be remembered that a woman may menstruate three times after becoming pregnant, in which case the uterus would be the size of four months when from the menstrual history she would only appear to be one month pregnant.

On the other hand, pregnancy may commence with an excessive loss, or a threatened miscarriage may supervene, in which case the diagnosis of fibroid only may be made. Again, it may be possible to feel a nodule in the uterus, which would settle the diagnosis of a fibroid.

In the later months of pregnancy amenorrhœa will always be present, the uterus will be markedly large, and parts of the fœtus may be palpable, although if the fibroid is in front or at the side of the uterus, the tumour may obscure the fœtus (Fig. 76).

As a rule, the difficulty in diagnosis arises when the fibroid is in front of the uterus, or at one or other side, causing rotation of the uterus. In such cases the ovum is surrounded by fibroids and may be for some time undetected, the diagnosis being made only by the rapid increase in the size of the uterus without any serious symptoms, the appearance of signs of fœtal life, or the supervention of a miscarriage.

FIBROIDS AND OVARIAN TUMOURS.—The association of ovarian cysts with a fibroid may give rise to errors in diagnosis.

If the fibroid is cystic in nature, the combination may be taken to be one of bilateral ovarian cysts (see p. 157); and if the ovarian is solid or a dermoid with semi-solid contents, the diagnosis of fibroids only may be made.

FIBROIDS AND SALPINGO-OOPHORITIS.—In these cases the diseased uterine tubes and ovaries may be overlooked and the mass felt ascribed

to one due to fibroids only, symptoms of inflammation, if present, being attributed to some secondary changes taking place in the tumour.

FIBROID AND EXTRA-UTERINE GESTATION.—Such a combination may lead to great difficulty in diagnosis. The whole swelling may be taken to be a fibroid, and the signs of pregnancy, if present, such as
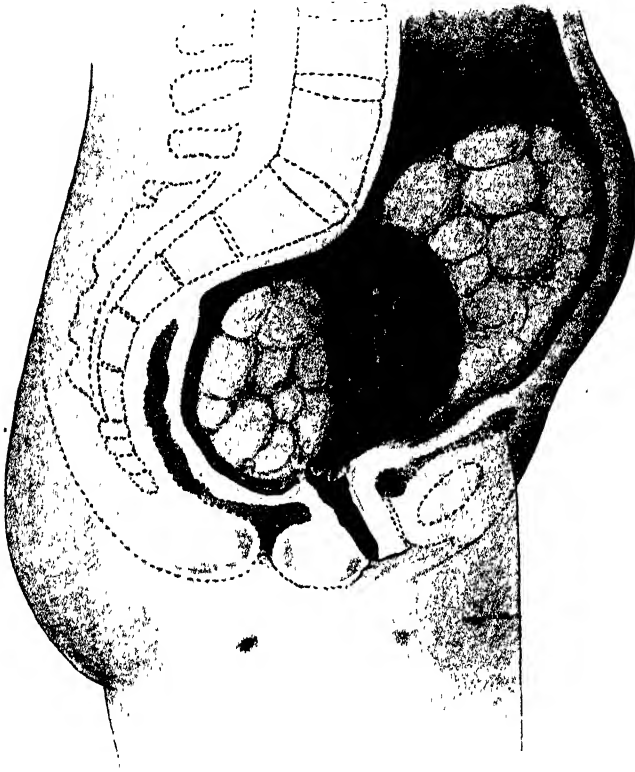
FIG. 76.—PREGNANCY IN A MYOMATOUS UTERUS.

amenorrhœa, breast changes, and perhaps morning sickness, may be ascribed to early intra-uterine pregnancy, while if bleeding and pain be present they may be attributed to secondary changes taking place in the tumour.

FIBROIDS AND CARCINOMA OF THE BODY.—It is known that the presence of fibroids in the uterus markedly increases the liability to carcinoma of the corpus. The association of carcinoma of the body with a fibroid is a very treacherous one, since the earlier symptoms are merely

an increase in the bleeding, and as the combination in question is most common at, or about, the menopause, this extra loss is ascribed to it.

It is important, however, for the practitioner to remember that the characteristic of a fibroid is a periodic loss, and when this periodic loss becomes irregular, and still more when it becomes continuous, it is certain that some secondary condition is being superimposed on the fibroid, and of these superimposed conditions carcinoma of the body is the one first to be borne in mind.

In many cases there are no means by which this combination may be detected short of operative procedures.

FIBROIDS AND CARCINOMA OF THE CERVIX.—This combination is a rare one. When it does occur it will probably first declare itself by irregular or continuous hæmorrhage, which should lead to a local examination, when indications of the growth may be detected.

The endo-cervical variety of carcinoma, however, may remain undetected for some time if adequate care in examination is not taken, since it cannot be seen or felt. This, again, is another instance of how important it is for the practitioner, by careful examination, to determine, if possible, the cause when the regular, although perhaps excessive, loss that may accompany fibroids becomes irregular or continuous.

FIBROIDS OF THE UTERUS AND THEIR COMPLICATIONS.

Having dealt with the diagnosis of fibroids of the uterus, their differential diagnosis, and their diagnosis when associated with other abdominal tumours, it now remains to discuss the complications they are liable to.

INCREASE IN THE AMOUNT OR ALTERATION IN THE CHARACTER OF THE HÆMORRHAGE.—Menorrhagia is the most prominent symptom of fibroids, but when this becomes severe and irregular hæmorrhage appears, it usually is an indication that some change is taking place in the tumour, and is therefore a signal for its removal.

Increased hæmorrhage results from cystic degeneration, red degeneration, infection, sarcomatous degeneration, the supervention of carcinoma, and the extrusion of a submucous tumour.

PRESSURE SYMPTOMS.—Some of the most dangerous fibroids are those which do not bleed, but which, on account of their environment, cause pressure on vital structures, since their presence, as a rule, is not realized until they have already inflicted serious injury on the patient.

Such fibroids are known as "impacted fibroids," the best and most dangerous example of which is a cervical fibroid.

This, as it grows, gradually fills the pelvis. until at last it becomes tightly wedged there.

As the periods are often normal with cervical fibroids, unless there is some condition in the body of the uterus to cause bleeding, the patient does not suspect the condition until there is some trouble on micturition, such as frequency ; but this even may be tolerated, until at last pressure of the tumour on the neck of the bladder causes retention of urine (see p 127).

Coincident with the pressure on the bladder there may be pressure on the rectum with constipation, rarely even fatal obstruction.

Such an impacted tumour will also cause pain from pressure on the sciatic plexus, and œdema of the legs, and at times thrombosis of the femoral veins from pressure on the pelvic veins.

One of the most striking indications of a fibroid tumour that is gradually becoming impacted is the history of a temporary retention of urine a few hours before menstruation occurs, requiring perhaps relief by catheter. Such a complaint should lead to an immediate examination of the patient, both abdominal and pelvic. We have known patients catheterized regularly every month for four or five months without any such examination being made.

The signs of a cervical fibroid large enough to cause this impaction or partial impaction are sufficiently striking. An abdominal examination will disclose, rising above the pubes in the middle line, a hard, non-elastic, fixed swelling, and on the top of it will be felt a smaller swelling, which is the body of the uterus.

On pelvic examination the cavity is found to be filled with a hard, fixed tumour, evidently part of that which is felt per abdomen, but it is often difficult to detect the cervix since the vaginal portion is generally taken up in the tumour, and all that one can feel is a slight opening, the external os.

Fibroids may become impacted in other ways, as follows : A sub-peritoneal fibroid with a stalk may slip into the pouch of Douglas and continue to grow there ; a sub-peritoneal fibroid may retrovert the uterus which gets caught by the sacral promontory, and is thus prevented from rising as the tumour grows ; a sub-peritoneal fibroid may itself get caught by the sacral promontory. An insidious form of impaction is due to the atrophy of a sub-peritoneal fibroid, which, for years perhaps, has been above the brim and caused no trouble, but with the menopause has gradually settled down into the pelvis ; we have met with two fatal cases due to this condition. A broad-ligament fibroid may also become impacted.

Pressure also may be the cause of trouble from the mere size of the tumour alone. Thus a fibroid, above the brim of the pelvis, may grow to a great size, and, under these conditions, cause œdema of the legs by pressure on the inferior vena cava or common iliac veins, pain by its

weight and pressure on nerves, injury to the kidneys by pressure on the ureters, and, occasionally, cardiac, pulmonary, and gastric distress by pressure on the diaphragm or stomach.

AXIAL ROTATION OF A FIBROID.—Rotation of a fibroid may occur under two conditions. The stalk of a sub-peritoneal tumour may become twisted or the uterus itself may be twisted at the cervix if the latter has been stretched by the growth of the fibroid.

The cause of this axial rotation is not known, but there is an increased liability to its occurrence during pregnancy or the puerperium. Adhesions may form between the tumour and neighbouring viscera and vary according to the amount of the twist. When rotation is complete, and the blood supply to the tumour cut off, severe symptoms are produced, similar to those described under ovarian cysts (see p. 158). Partial rotation causes the tumour to become very tender, but without grave symptoms.

MYXOMATOID DEGENERATION. — Myxomatoid degeneration of a fibroid consists in destructive changes of tissues with accumulation of fluid, so that cystic cavities varying in size and number are formed therein.

Such a degeneration declares itself by an increase in the rapidity of the growth of the fibroid, far in excess of the normal rate in these tumours. This change is accompanied by an increased loss at the menstrual period and a softening of the tumour, so that it becomes cystic, and may simulate an ovarian cyst or pregnancy (see p. 149).

INFECTION.—Septic organisms may be conveyed to a submucous fibroid through the means of a surgically unclean sound or other instrument, or by the extension of sepsis primary in the vulva or vagina. A sub-peritoneal fibroid may become infected from disease of the bowel, appendix, uterine tube, or ovary, and an interstitial fibroid by extension from the uterine cavity.

A fibroid polypus of the body may become infected after it has been expelled into the vagina, its stalk being grasped tightly by the cervix with a resulting œdema of the tumour. Septic bacteria, which at all times may be found at the entrance of the vagina, then infect it.

The results of infection of a fibroid tumour are very serious. An abscess may form in the tumour, but this is very rare, and is more likely to occur as a result of puerperal infection.

Generally the tumour sloughs, with the result that if it is submucous or interstitial in nature it is eventually expelled per vaginam ; or, if sub-peritoneal, the pus escapes into the peritoneal cavity, unless the bowel has become adherent, when rarely it may escape through that channel.

The patient exhibits symptoms of fever, together with severe pain over the uterus. On examination, fever is present of a varying severity,

and there is marked tenderness of the uterus, and a very offensive discharge if the pus is escaping by the vagina.

SARCOMATOUS DEGENERATION.—Sarcomatous degeneration is reported to be present in 2 per cent. of fibroids removed by operation.

The presence of sarcomatous degeneration is suggested by a rapid growth of the tumour, accompanied by severe hæmorrhage, pain, wasting, and a marked deterioration of the general health, and most particularly should it be suspected if there is a history of a rapidly recurring submucous tumour or polypus.

In several of the most striking cases that have been reported, the operator removed per vaginam what he took to be an ordinary fibroid (polypoid, or sessile), but a microscopical examination was not made. The symptoms, after ceasing for a short while, recurred, and renewed investigation disclosed another tumour. This again, in some cases, was removed in ignorance of its true nature, and again recurrence took place. Indeed, cases have been reported in which such a sequence of events has occurred four times before the nature of the growth was discovered.

RED DEGENERATION.—This interesting form of degeneration which appears to depend on the occurrence of thrombotic processes in the vessels supplying the tumour is more often, though not by any means always associated with pregnancy or recent delivery. The symptoms are acute, the tumour becomes very tender, and fever is frequently present.

In some cases an offensive discharge appears after a few days, which supports the view held by some that red degeneration is due to microbic infection. We have seen cases in which the symptoms of red degeneration passed into those characteristic of sloughing, with attempts at spontaneous expulsion of the tumour, in which the features of septic abortion were very closely mimicked. Red degeneration is the commonest cause of sudden pain in a myoma associated with pyrexia.

CALCAREOUS AND FIBROTIC DEGENERATION.—In both these forms of degeneration the tumour becomes intensely hard, avascular, and tends to shrink in size. This form of degeneration is particularly seen in aged persons. Calcareous fibroids when sub-peritoneal often set up chronic peritonitis owing to their rough surface, and may be the cause of much pain. · Dermoid cysts occasionally calcify, and then are usually mistaken for a calcified fibroid.

RUPTURE OF VEINS OVER A FIBROID.—Following adhesions of the omentum to a myoma, large veins the result of vascular proliferation from the omental vessels sometimes spread over the surface of the tumour, whilst pedunculated tumours at times exhibit them in the

absence of such adhesions. It has occasionally happened that such a vein has been torn or has given way spontaneously with profuse intra-peritoneal bleeding. The sudden onset of signs of internal hæmorrhage in a patient known to have a fibroid would suggest such a happening.

ABDOMINAL TUMOURS ARISING IN THE UTERINE TUBE.

SALPINGITIS.—Most tubal tumours are of inflammatory origin. As already shown, the swelling caused by salpingitis is compound in nature, only part of it being made up by the tube itself, the rest consisting of thickened and adherent gut, mesentery, and omentum. It is character-istic of inflammatory tumours that they do not make their appearance until some days have elapsed since the onset of the symptoms.

A swelling the result of salpingitis, so large that it can be felt from the abdomen, therefore takes some time to form, and its appearance is preceded by the typical symptoms of pelvic peritonitis—namely, marked tenderness and rigidity of the lower abdomen, gaseous distension, and rapid pulse and fever.

The swelling is more or less central, with an inclination to that side in which the affected tube lies, or, if both are inflamed, then towards that side where the inflammation is most marked. It is a very indefinite swelling at first, but becomes more defined as time goes on, and is often partly resonant (see pp. 67 and 172).

TUBAL GESTATION.—Of less frequency, but of equal importance as the tumour formed by tubal inflammation, is the mass formed as a result of rupture of a tubal gestation. This swelling when large enough to be felt from the abdomen has, as a rule, the same striking characteristic as that due to salpingitis, i.e. it only becomes apparent some time after the onset of the symptoms. Its onset is preceded by the signs of symptoms of internal hæmorrhage in degree varying with the amount of blood lost and by signs of peritoneal irritation due to the presence of blood in the peritoneal cavity.

The mass felt per abdomen may consist only of the blood-distended tube together with matted omentum and bowel, but when large nearly always consists partly, if not chiefly, of blood in the peritoneal cavity more or less encysted by adherent omentum, intestine, and mesentery. This mass of blood so formed constitutes a hæmatocele, and it may reach as high as the umbilicus and form an extremely definite tumour (see p. 136).

The swelling caused by tubal gestation is somewhat lateral if the effused blood remains in or about the ruptured tube, but a hæmatocele forms a central tumour, often very defined. In either case partial

resonance may be obtained on percussion, due to gas-distended coils of intestine lying in part of the mass.

A very rare form of tubal tumour is that due to tubal gestation advanced to the later months of pregnancy.

NEW GROWTHS OF THE TUBE.—Finally, a tubal tumour may be caused by new growth—usually carcinoma, though sarcoma and chorio-carcinoma are both occasionally met with. Carcinoma of the tube is a very rare disease, and the swelling forms insidiously at first —later on, when pain is complained of, a mass may be discoverable in the abdomen which is impossible to distinguish from that due to the far commoner event of malignant disease beginning in the ovary. Some of these cases exhibit periodic discharges of watery blood-stained fluid from the vagina, the occurrence of which should always suggest the condition (see pp. 58 and 228).

DIFFICULTIES IN THE DIFFERENTIAL DIAGNOSIS OF ABDOMINAL SWELLINGS OF TUBAL ORIGIN.—The most difficult problem in the diagnosis is the distinction between salpingitis and ruptured tubal gestation (see also pp. 226 and 227).

The general features are very similar. The onset of the symptoms is abrupt, and the swelling develops some time after the onset. The swelling when it appears is at first indefinite, but becomes more and more defined as the days go by. There is tenderness, pain, and flatulent distension of the abdomen in either case. In certain cases tubal gestation can be excluded on account of the age of the patient or other circumstances, whilst in others pregnancy is strongly suggested on account of a history of precedent amenorrhœa and other classical symptoms.

It is, however, to be remembered that a history of amenorrhœa is only obtainable in a proportion of the cases of tubal pregnancy, whilst salpingitis, particularly when it is complicated by suppuration in the ovary, may be the occasion of a missed period.

The general aspect of a patient suffering from ruptured tubal gestation is anæmic—sometimes markedly so, and there may be a history of fainting with the onset of the pain. When, however, she is not seen till some time after the attack, she may be flushed by the fever, which in many cases appears after a few days.

With salpingitis the aspect is that of fever from the beginning.

In regard to the presence of fever it may be pointed out that immediately following the rupture of a tubal gestation the temperature is subnormal or at least not raised, but after some days the peritonitis set up round the effused blood frequently produces quite marked fever.

On the other hand, acute and sub-acute salpingitis are characterized by more or less high fever from the start.

More or less vaginal loss is the rule with tubal gestation, but is uncommon with salpingitis (see p. 60).

Very chronic salpingitis and the late results of salpingitis, such as hydrosalpinx and tubo-ovarian cysts, on the other hand, may not be accompanied by any fever—merely by swelling and pain (see p. 151).

These are the cases simulated by malignant disease of the tube, which, as a matter of fact, is usually superimposed on chronic salpingitis.

OTHER CONDITIONS SIMULATING AN ABDOMINAL SWELLING
ORIGINATING IN THE UTERINE TUBE.

APPENDICITIS.—The close similarity between the symptoms and signs of appendicitis and those of salpingitis has already been referred to (see p. 73).

The abdominal swelling formed by an inflamed appendix does not, as a rule, extend into the pelvis, and cannot be felt from the vagina, but when the appendix is lying on the right brim or actually in the pelvis, this distinction disappears, and the general features of inflammation of the right uterine tube are exactly mimicked.

It is unusual for the swelling of appendicitis to occupy Douglas pouch entirely or to displace the uterus, but, on the other hand, the swelling of salpingitis may occasionally be above the pelvic brim, especially when the attack occurs soon after labour, while the tube is still in an unusually high position.

The swelling of appendicitis may also simulate that due to a rupture of tubal gestation on the right side, but as a rule by the time the blood tumour due to the latter-mentioned condition has attained a degree of definiteness and a position sufficient to simulate appendicitis, the general features of a ruptured tubal pregnancy are sufficiently well marked to make a correct diagnosis.

DIVERTICULITIS.—This rare cause of local peritonitis usually affects the pelvic colon, and the mass formed lies therefore towards the left side. The general symptoms exactly resemble those of appendicitis. The swelling may or may not be palpable from the vagina. An exact diagnosis is usually impossible.

TORSION AND INFLAMMATION OF PRE-EXISTENT TUMOURS.—A twisted or inflamed neoplasm, such as an ovarian cyst or myoma, may simulate the inflammatory swelling due to inflammatory disease of the tube or of a ruptured tubal gestation.

The great distinction to be borne in mind is this : that in the case of neoplasms a definite abdominal tumour is present from the outset of the symptoms, whereas in tubal inflammation or a ruptured tubal gestation it only appears after the lapse of some days (see p. 69).

RUPTURE OF AN OVARIAN CYST.—Rupture of a malignant ovarian cyst is often productive of sudden pain, swelling, and fever, closely resembling an attack of salpingitis. The presence of signs of free peritoneal fluid, and the fact that a definite tumour can be felt from the first, strongly point to the former diagnosis (see p. 160).

THE SIGNS DISCOVERABLE ON VAGINAL EXAMINATION.

Vaginal examination may disclose—

1. That there is tenderness of part or the whole of the vaginal vault without other obvious changes.
2. That the uterus is altered in size.
3. That the uterus is displaced.
4. That a swelling in relation to the uterus is present.
5. That some abnormality of the cervix exists.
6. That some abnormality of the vagina exists.
7. That some abnormality of the vulva exists.

PELVIC TENDERNESS.

Highly sensitive persons frequently complain of great pain on palpation of the pelvic viscera when nothing abnormal exists, and the problem of distinguishing between the tenderness due to pelvic peritonitis or effusion of blood into the pelvis from that due to mere hypersensitiveness is exceedingly important.

Pelvic tenderness without other obvious change is a marked characteristic of early salpingitis, and particularly of ruptured tubal gestation before the effused blood has had time to form a definite tumour.

The tenderness may be exquisite, and this may be all that the examiner is able to make out in the early stage of those conditions. Any attempt to "swing" or "rock" the uterus p oduces great pain. Rectal examination is also very distressing directly the region of the peritoneum is pressed upon.

The tenderness is at its maximum or solely located in the neighbourhood of the lesion. Thus in salpingitis it is situated to one or both sides of, and is rather behind the uterus. The same is true of ruptured tubal gestation in which the effused blood remains in or around the uterine tube. When, however, it fills Douglas pouch, as in hæmoperitoneum or a localized hæmatocele, the maximum tenderness is in the posterior fornix.

On the other hand, when the tenderness is merely due to hypersensi-

tiveness, movement of the uterus does not usually cause increased com-plaint, and indeed, if the attention of the patient is distracted, may be able to be accomplished without protest on her part. Moreover, the tenderness is more or less general and can, for instance, be elicited on pressure through the anterior fornix, although nothing pathological can there be felt. The significance of this fact is that the peritoneal sac is at this point far removed from the finger, and that a lesion causing tenderness there to light pressure is uncommon, and when it occurs can always be felt as a thickening or lump.

Appenditicis, when the appendix is situated in the pelvis, may be a cause of marked tenderness on palpation through the posterior vaginal fornix.

THE SIZE OF THE UTERUS IN RELATION TO CERTAIN CARDINAL SYMPTOMS.

THE UTERUS IS NORMAL IN SIZE

With Amenorrhœa.—For the conditions causing amenorrhœa when the pelvic organs appear to be normal, see page 42.

With Hæmorrhage.—At puberty, as well as at the menopause, menorrhagia and irregularity of menstruation may be present, with the uterus and other pelvic organs apparently quite healthy. This bleeding at the two extremes of reproductive life, together with other causes of bleeding, have already been discussed (see p. 48), and we need only repeat here that whilst with such a complaint at puberty it may be justifiable to postpone a local examination for a short time in the hope that with appropriate treatment menstruation will become normal, at the menopause a local examination should be made forthwith, since in many cases of this kind there is a pathological foundation for the complaint.

The pelvic congestion associated with the newly married, with high living, with disease in organs other than pelvic, such as the heart, lungs, kidneys, liver, etc., may also give rise to menorrhagia in a woman with a normal uterus.

Fibrosis of the uterus, though giving rise to the most profuse hæmorrhage, often exists without any enlargement of the organ, and the same is true of endometritis and a small intra uterine polyp.

Finally, it is important to remember that carcinoma of the body of the uterus does not at first appreciably enlarge the organ. In this regard it is necessary to correlate the size of the uterus with the age of the patient. To discover in a woman of 70 a uterus of the size natural to a woman of 35 is to discover an abnormality.

With Discharge.—For the various causes of discharge the reader is

referred to page 61, and among them will be found those associated with a uterus normal in size.

With Pain.—The subject of dysmenorrhœa is discussed on page 97. In certain cases of dysmenorrhœa, those of the type we have termed virginal, the uterus often is, as far as examination can determine, normal in size.

With Sterility.—The subject of sterility is discussed on page 111.

THE UTERUS IS LARGER THAN NORMAL.

The conditions we have here to think of are pregnancy, subinvolution, chronic endometritis, adenomateus hypertrophy, polypi, fibroids, adeno-myoma, fibrosis, carcinoma, chorio-carcinoma, and sarcoma of the body of the uterus.

With Amenorrhœa.—If a patient of a child-bearing age consults the practitioner for amenorrhœa, he should certainly make a pelvic examination. If he finds the uterus enlarged, in all probability the patient is pregnant, and if stoppage of the periods has occurred suddenly, such a probability becomes practically a certainty, for there is no other condition which would stop regular menstruation and at the same time enlarge the uterus other than pregnancy.

With the exception of hæmatometra and pyometra, both of which conditions are very rare, all other diseases in which the uterus is enlarged give rise either to menorrhagia, irregular hæmorrhage, or at least no alteration in the menstrual cycle. In the case of a hæmatometra the cessation of menstruation is apparent only, and the symptoms associated with it and also with a pyometra are so distinctive (see p. 150) that a correct diagnosis may be made without much difficulty.

A pregnant uterus should be felt by the abdomen at the fourth month. It is before this that most of the difficulties will arise, and certain of the earlier signs of pregnancy, therefore, must be taken into account, such as morning sickness, breast changes, blue colouration of the cervix, softening of the cervix.

We have already dealt with these minor signs when discussing abdominal tumours (see p. 132), and may repeat that, taken by themselves, they are of very little value. If the patient has amenorrhœa and an enlarged uterus, then due weight must certainly be given to their presence or absence, but if a history of amenorrhœa is not obtainable, or there is a doubt about the size of the uterus, then these earlier signs are of no practical use at all as aids to diagnosis.

In estimating the size of the uterus the practitioner must take into account the condition of the patient, whether she is fat or thin, and the state of her abdominal muscles, whether they are rigid or lax.

In a thin woman, with lax abdominal muscles, it is possible to detect the enlargement of the uterus early in pregnancy, and to one who is experienced, that of a gestation of three weeks may be made out. The difficulty, however, increases with the adiposity and rigidity of the abdominal wall. When these are marked it may even be impossible to detect a four months' pregnancy bimanually without an examination under anæsthesia, because pregnancy softens the uterus very considerably in the earlier months, and at times so marked is this softening that it is difficult to feel the uterus even when the examiner is assisted in this way.

The position of the cervix is of some importance in these difficult cases, since if one cannot feel the uterus it may be that it is not in its normal position (see p. 203).

Further help may be gained by moving the cervix to and fro, an idea as to the size of the uterus being obtained by the sense of resistance and weight conveyed to the finger. The uterus may also be weighed by placing the finger under the cervix and lifting it up. Such devices as these, however, require long practice to make them of any value.

It must also be remembered that a partially distended bladder gives a sensation similar to that of an enlarged uterus, but here, on bimanual palpation, pressure-transmission through the bladder to the cervix will not take place, whilst a movement of the cervix will not convey a corresponding movement to the lax swelling. If there is any doubt the passage of a catheter settles this point of the diagnosis.

With regard to the amenorrhœa it must be remembered that under certain conditions women will assert this symptom to be present when all the while they are regular (see p. 133).

Although, as we have stated, the association of amenorrhœa with an enlarged uterus in a woman capable of conception makes pregnancy nearly a certainty, nevertheless the marked difficulty in some patients of diagnosing an early enlargement of the uterus and the occasional chance of deceit on the part of the patient as to her menstrual history may make it impossible to come to a definite conclusion.

In such cases the practitioner should be very careful in his diagnosis, and must be guided by the circumstances of the case what information he gives to the patient. In a single woman who seeks advice having incurred the risk of pregnancy, he should place the facts before her and tell her to come later for a further examination.

If the practitioner, on examining a single woman complaining of amenorrhœa, has found an enlarged uterus, he is quite justified in telling her that if she had been married he would have thought she was pregnant. If now she denies such an imputation, he should refuse to give a diagnosis, and let time settle the question.

If the question arises with a sensible married woman, the practitioner may discuss openly the difficulties of the case, and point out that certain signs of pregnancy, fœtal movements, and fœtal heart sounds do not appear till between the fourth and fifth month, and that one or more examinations must be made at proper intervals to determine the question.

Lastly, the practitioner may be consulted by a foolish, unreasonable woman who takes up the attitude that he ought to be able to tell at once whether she is pregnant or not, and, moreover, in such cases she is nearly certain also to be a woman who is passionately desiring a child, and perhaps approaching an age when such a consummation is very unlikely.

These patients are very troublesome, and the practitioner must be particularly on his guard. To tell her that she must wait for further signs will not satisfy her, she will refuse to do so, and accounts any hesitation on the part of the practitioner as a confession of ignorance. In such circumstances he should refuse to give a definite diagnosis unless the patient will allow herself to be examined under an anæsthetic, when in practically all cases he will be able to tell the size of the uterus.

Another difficulty, however, here presents itself, for an examination under an anæsthetic may induce a miscarriage for which the practitioner will be accounted responsible, and if the patient does not again become pregnant he will be blamed to all and sundry during the remainder of her life.

The wisest course is to refuse to give any definite opinion, and to offer to examine under an anæsthetic only after giving due warning that, if pregnancy exists, such an examination may cause the uterus to empty itself.

Abderhalden devised a biological test for pregnancy which depended on the alleged fact that in this state the blood contains a ferment capable of splitting protein substances into peptones and amino-acids. The test is carried out by adding the serum of the patient to a solution of placental albumen, when, if she be pregnant, peptones and amino-acids are said to be produced, and can be recognized by various tests. From reports to hand, the reliability of this test appears to be very questionable.

With Hæmorrhage.—PREGNANCY.—Hæmorrhage with an enlarged uterus may be due to a threatened miscarriage or to a mole (see pp. 54, 132, 136, and 167).

SUBINVOLUTION.—One of the commonest causes of hæmorrhage with an enlarged uterus is subinvolution, and this condition may or may not be associated with retained gestation products.

The history of a recent confinement or miscarriage will be suggestive. Then certain information may be elicited which would point to sub-involution as the cause of the trouble—for instance, the patient may not have suckled her child, she may have had serious antepartum or post-

partum hæmorrhage, pelvic inflammation may have followed the termination of the pregnancy, there may be a history of adherent placenta, or the patient may have some organic disease. If the enlargement and bleeding is associated with retained secundines, irregular hæmorrhage will probably be present, and the cervical canal may be patulous.

In the condition under discussion the uterus is uniformly enlarged, smooth, and movable. The enlargement may not be very marked, and without using a sound it may require a considerable amount of experience to detect it, the cavity seldom exceeding $3\frac{1}{2}$ inches from this cause alone.

It has to be remembered that although in the majority of cases of subinvolution the hæmorrhage has dated from the confinement, yet in a certain number this symptom may not declare itself for some months. In some of these cases the operation may reveal a small piece of placental tissue.

To sum up then, we may say that given a uterus larger than normal, of normal position, shape, and consistence, with a history of menstrual excess or irregular hæmorrhage following a recent confinement or miscarriage, and an absence of evidence of disease in the other pelvic organs, a diagnosis of subinvolution is warranted.

CHORIO-CARCINOMA.—Chorio-carcinoma is a very rare disease, and the chances of an abnormally enlarged uterus following labour or abortion being due to this cause are peculiarly remote, nevertheless it must of course be taken into consideration.

Such an enlargement would be more suspicious if the pregnancy had terminated in a vesicular degeneration of the chorionic villi, for over 50 per cent. of the cases of this malignant disease have followed a vesicular mole (see p. 167).

Chorio-carcinoma is associated with fever, pain, and always with a gradually enlarging uterus, and if the condition is not soon detected and treated, secondary deposits in the vagina or abdomen, or pulmonary signs due to secondary deposits in the lungs will reveal its presence (see p. 267).

CHRONIC ENDOMETRITIS.—In chronic endometritis the uterus is somewhat enlarged, the sound passing as a rule 3 to $3\frac{1}{2}$ inches. The condition may be associated with misplacement and tubal disease, but we are dealing now with those cases in which these complications are absent.

There is often a history of some septic infection following labour or abortion, or some inflammatory attack of the vulva or vagina. In such, the patient complains of menorrhagia, discharge, and often of dysmenorrhœa. On palpating the body of the uterus there will be nothing abnormal to detect except its slightly increased size, and on inspection of the cervix an " erosion " and other evidence of inflammation will be found. The mucous membrane removed by curettage may on microscopical examination exhibit changes due to inflammation.

In other cases all history or signs indicative of inflammation are absent. In this condition (so-called adenomatos endometritis, glandular endometritis, polypoid endometritis, or hypertrophic endometritis) the patient will give a history of a gradually increasing menorrhagia, and in the intervals of a marked watery discharge which is at times slightly tinged with blood. Dysmenorrhœa is also present.

On a bimanual examination being made, the uterus is found to be distinctly enlarged and of normal consistence ; the sound will pass from 3½ to 4½ inches (see p. 57).

On dilatation of the cervix and digital examination of the cavity, the lining membrane is found to be soft and thickened, and the curette will bring away large pieces of mucous membrane which, on microscopical examination, are found to consist mostly of hypertrophied gland tissue.

POLYPI OF THE BODY OF THE UTERUS.—The body of the uterus may be the seat of a mucous or fibroid polypus.

The symptoms will be those of menorrhagia and irregular hæmorrhage, dysmenorrhœa, and discharge. On examination, the uterus is found to be enlarged, mobile, and regular in outline.

In these cases the cervical canal is often a little patent, and if so this fact will be in favour of the presence of a polypus. The cavity of the uterus will be enlarged, and rarely the polypus may be detected with the point of the sound. It sometimes happens that the internal os is so patent that the polypus can be detected with the index finger.

In the absence of dilatation of the cervical canal, uterine polypi cannot be diagnosed for certain before the cervical canal is dilated and an intra-uterine examination made.

If mucous polypi are present, the uterus will be slightly enlarged, and the case will probably have been regarded as one of endometritis which drug treatment has failed to cure, and the diagnosis will only be made on dilatation of the uterus.

A fibroid polypus can enlarge the uterus to a much greater size than a mucous polypus, and the consistence of the uterus will be much harder. With a closed cervical canal an absolute diagnosis is impossible. It is always a safe rule, therefore, when the uterus is regularly but not markedly enlarged, to dilate the cervix and make an intra-uterine examination, since it has many times happened that when a uterus has been removed on the supposition that it was fibrotic or contained an interstitial fibroid, it has been found, when cut open, to be the seat of a polypus which could have been removed without sacrificing the organ.

FIBROIDS.—Fibroids of the uterus usually cause sufficient enlargement to render the organ easily felt on abdominal examination, though relatively large tumours ensconced in the pelvis may be quite undetectable from above. A fibroid not sufficiently large to make this organ

palpable on abdominal examination is unlikely to be detected unless it is causing hæmorrhage.   Moreover, an intra-uterine examination may be necessary to determine the cause of the bleeding if the tumour is submucous in position, and regularly enlarges the organ in all its diameters.

If the patient is 35 years of age or over, if she has been bleeding for some time, and if dysmenorrhœa has recently made its appearance, these facts would be in favour of a fibroid being present (see p. 161).

ADENO-MYOMA.—This is a disease impossible to diagnose with any certainty before the uterus is removed and sectioned. The principal symptom is menorrhagia, and the sign an increase in the size of the body of the uterus, which is mobile, and which is in outline smooth and regular.

A uterus the seat of this disease would, if it was well enlarged, be mistaken for an interstitial or submucous fibroid not affecting its shape, and if smaller, then fibrosis is most likely to be diagnosed.

As the treatment for a fibroid or fibrotic metritis of the uterus causing such severe bleeding would be removal, the failure to make a precise diagnosis is of no practical importance.

FIBROTIC METRITIS ("UTERINE FIBROSIS").—Fibrotic metritis or fibrosis of the uterus is a disease in which the muscle of this organ is largely replaced by fibrous tissue, the coats of the arteries being specially affected in certain cases.   The result is that the uterus feels much harder than usual, its walls become much thicker, attaining at times to an inch or more, and the size of the uterus is thereby enlarged.   The chief complaint of a patient suffering from this disease is that of menorrhagia (Fig. 77).

FIG 77 — FIBROSIS OF THE UTERUS.

Fibrosis of the uterus is diagnosed more by a process of elimination than by actual observation, the usual history of such cases being that,
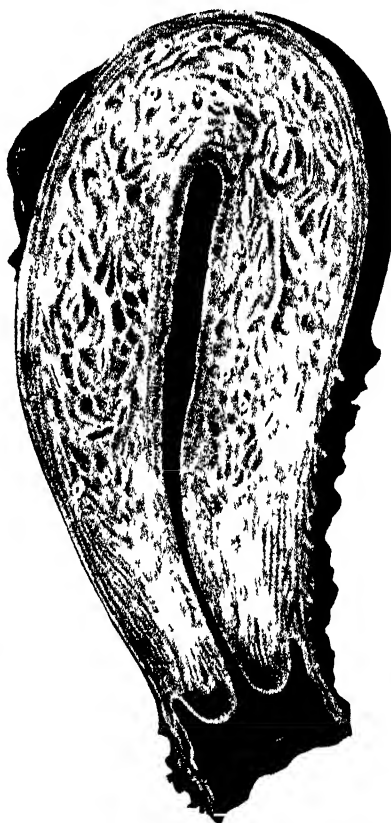
beyond the increased size and hardness of the uterus, nothing abnormal is detected even when the cervical canal is dilated. Before this is done the patient has probably been treated for a lengthy period with every known uterine hæmostatic to very little or no purpose. The patient is generally married and between 30 and 40 years of age, though we have seen and operated upon typical examples of this disease in virgins under 30. In some cases, though by no means all, there is a history of previous pelvic inflammation (see pp. 52, 56, 58).

CARCINOMA OF THE BODY OF THE UTERUS.—The history in a case of carcinoma of the uterine body may be of real assistance in its diagnosis. The average age for this disease to supervene is 53—that is, a year or two after the cessation of menstruation. It may occur in much older women, more rarely in younger. Unlike carcinoma of the cervix, the sufferers from which have nearly all borne children, carcinoma of the corpus is met with in the nulliparous with rather greater frequency than in the parous. This is probably because sterility is associated with fibroids the presence of which in the uterus favours the development of carcinoma therein.

The first symptom is hæmorrhage, and this is likely to proceed for some time before pain and offensive discharge declare themselves—in fact, the last symptom, being due to sloughing, is quite a late one in the disease.

An examination of the uterus will probably disclose that it is enlarged, but otherwise nothing abnormal may be detected, the uterus being mobile and in its proper position (see p. 168).

In such a case as this the practitioner should certainly advise his patient to have the interior of her uterus examined, and on this being done, a rough area which is friable and bleeds on manipulation, or a soft fungating mass will be detected, and if any pieces are removed a microscopical examination will confirm the nature of the disease.

We have already dealt with carcinoma more advanced than this, with partial fixation of the uterus and an offensive discharge, when the uterus will probably be felt from the abdomen (see p. 168), and with cancer in a normal-sized uterus, and we shall presently describe it in the atrophied organ of old age.

The practitioner must be particularly on his guard when consulted for hæmorrhage by a patient of the age indicated above, since so many of these cases at their commencement are ascribed to the menopause. He should make it an invariable rule, therefore, *to insist upon a thorough examination of every woman, married or single, who, being over* 40 *years of age, consults him for irregular hæmorrhage.* As a fact he would do better by examining every female of any age with such a history.

SARCOMA OF THE BODY OF THE UTERUS.—It would be impossible for

the practitioner to distinguish for certain between carcinoma and sarcoma by the usual methods of examination at his disposal. It may occur in young women, whereas carcinoma of the body never does.

CHORIO-CARCINOMA.—Marked enlargement of the uterus with continuous hæmorrhage following a comparatively recent delivery or miscarriage or, in particular, a vesicular mole is very suggestive of this rare growth, especially if the patient be so young that the presence of a fibroid in the uterus is very unlikely.

With Discharge.—There are various conditions giving rise to enlargement of the uterus which are accompanied by a discharge. Thus pregnancy may cause a watery discharge, either due to leaking liquor amnii or an excessive activity of the glands of the decidua vera. Carcinoma of the body of the uterus is characteristically accompanied by a discharge, at first watery and blood-stained, and later on foul-smelling. The hypertrophy of the endometrium which occurs in some cases of fibroids and in hypertrophic endometritis occasions a watery discharge, particularly occurring or limited to the first few days after the menstrual flow. Purulent endometritis gives rise to a discharge of pus, such being chiefly seen in old women in whom, as a rule, the uterus is smaller than normal, but on occasions, especially if pus be retained in the body of the uterus, it may be enlarged. Sloughing fibroids may give rise to a very foul discharge, as may a necrotic gestation or remains of a gestation.

With Pain.—Severe pain in association with an enlarged uterus is present with acute endometritis, corporeal carcinoma, and extrusion of a fibroid.

With Sterility.—The most probable causes of sterility, in which the only abnormality to be discovered is an enlargement of the body of the uterus, are a fibroid tumour or subinvolution.

THE UTERUS IS SMALLER THAN NORMAL.

With Amenorrhœa.—CLIMACTERIC.—The commonest cause of this association is the normal menopause.

The history is sufficient to diagnose the condition, since the patient has passed 50 years of age, her periods have stopped either suddenly or gradually, and other signs of the menopause are present.

In some cases the menopause may be premature, occurring at 40 or even earlier.

SUPERINVOLUTION.—This is a rare condition in which, following labour, a premature menopause has ensued with the usual symptoms and signs of this state. Rapid atrophy of the uterus occurs.

MALDEVELOPMENT.—If the uterus retains its infantile form, or does not develop at puberty, the patient will have amenorrhœa.

With Hæmorrhage.—SENILE ENDOMETRITIS.—Inflammation of the endometrium, after the menopause, is characterized by an offensive discharge, and in some cases by irregular hæmorrhage. With such symptoms as these and at such an age it is imperative, as we have already insisted upon, that the cavity of the uterus should be examined, in which case the mucous membrane will be felt to be quite smooth. There will be no marked bleeding on manipulation, and if the curette is used only a very small quantity of mucous membrane can be removed, and this being subjected to microscopical examination its glandular element will be found to be very deficient, whilst there is a marked increase in the fibrous tissue.

The distinction between senile endometritis and early cancer of the body of the uterus is often difficult, and sometimes impossible, short of exploring the uterus ; but it is to be noted that whereas in the former, pain is a late symptom, if it occurs at all, in the latter it is reasonably early ; and whilst in carcinoma an offensive discharge appears at a comparatively late stage of the disease, in senile endometritis it is the first thing complained of.

The history of the illness is also of some use, since carcinoma, as time progresses, tends to get markedly worse, whilst senile endometritis may continue for many months without having an appreciable effect on the health or weight of the patient. It is important to remember that in many cases carcinoma of the body is superimposed on senile endometritis.

CARCINOMA OF THE BODY OF THE UTERUS.—Carcinoma of the body of the uterus does not necessarily enlarge the organ, especially when the type of growth is ulcerative.

It is very important to remember that this form of the disease is probably constantly preceded by senile endometritis, and that the symptoms of the latter may pass imperceptibly into those of the former.

In all cases of doubt, therefore, the practitioner should advise the patient to submit to examination and exploration of the uterus under an anæsthetic (see p. 66).

With Discharge.—Discharge in this connection is usually due to senile endometritis or carcinoma of the body of the uterus, and is of an offensive type.

With Pain.—Pain is always present sooner or later in carcinoma of the body, and sometimes in senile endometritis.

With Sterility.—Sterility in a woman with a uterus smaller than normal may be due to a premature menopause, superinvolution, or maldevelopment.

THE UTERUS IS ABSENT OR DEFORMED

The uterus may be congenitally absent, or, as the result of want of fusion of the Müllerian ducts, one of the various varieties of double uterus may be present. Of these there are four :—

1. The completely double uterus, often associated with a double vagina (Fig. 78).
2. The septate uterus, in which a thin septum divides the cavity into two parts (Fig. 79).
3. The bicornute uterus, in which with a single cervix two bodies are present (Fig. 80) ; and
4. The unicornute uterus, in which the upper part of one Müllerian duct has remained undeveloped (Fig. 81).

The relation borne by such deformities to the five symptoms under discussion is as follows :—

With Amenorrhœa.—If the uterus is absent the menses are necessarily absent also.

With the other deformities menstruation occurs as a rule, though amenorrhœa is quite common, because the ovaries are often undeveloped.

In the case of an undeveloped horn a very frequent phenomenon is that the menstrual discharge from this half of the uterus is retained within it, thus producing a hæmatometra which is situated to one side of the developed half of the uterus.

These cases are puzzling, because with monthly recurring attacks of pain suggestive of retained menses the patient has the usual monthly flow. On examination the tumour formed by the distended horn will be felt.

With Hæmorrhage.—This is unusual with a double uterus, but the deformed organ is not exempt from those diseases which produce excessive bleeding from a normally formed organ (fibroids, fibrotic metritis, etc.).

With Discharge.—The fact of a double uterus, *per se*, stands in no causative relation to a uterine discharge, except in the case of pregnancy in one of the halves, when a decidua forms in the other half. After parturition this is expelled, and if in the process sepsis occurs, a foul discharge may be the result.

With Pain.—We have had several cases of severe dysmenorrhœa associated with a double uterus.

Retention of menstrual blood in an undeveloped horn causes monthly recurring attacks of severe pain associated with a fluctuating swelling to one side of the apparently normal uterus.

Pregnancy in an undeveloped horn produces the same symptoms as tubal pregnancy, and cannot be distinguished from it before the abdomen is opened.

With Sterility.—Pregnancy, though less likely, may occur in a double uterus. We have met with several examples. The gestation usually goes to term, and the labour is normal.
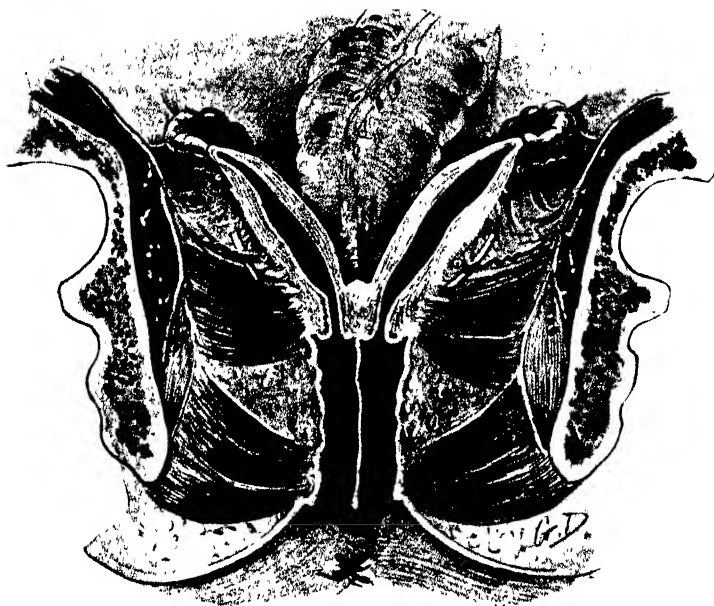
Fig. 78.—Uterus Duplex.
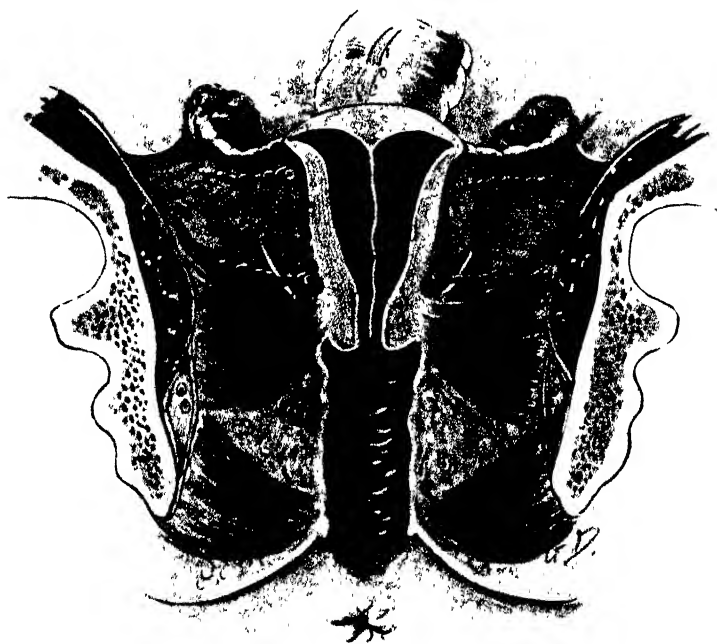
Fig. 79.—Uterus Septus.

FIG 80.—UTERUS BICORNIS UNICOLLIS.
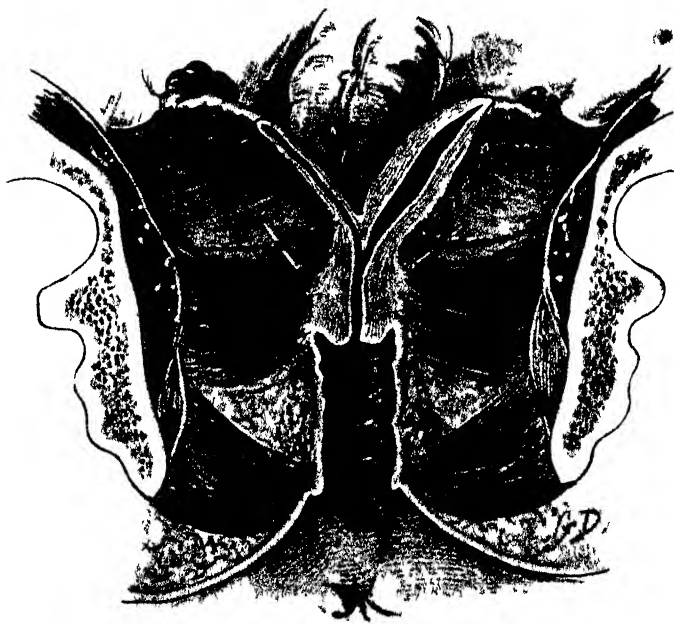
FIG. 81.—UTERUS BICORNIS WITH ONE HORN UNDEVELOPED.

THE DIAGNOSIS OF UTERINE DISPLACEMENT.

THE UTERUS IS DISPLACED FORWARDS (ANTEFLEXION).

Acute anteflexion is often congenital in origin and also may be found in early pregnancy, the weight of the enlarged body causing the softened uterine muscle to bend. When the uterus is anteflexed the cervix is found to be occupying its normal position, and the body of the uterus is tilted forwards so that there is a distinct angle between it and the cervix. Any swelling behind the uterus of sufficient size will also displace the uterus forwards. Marked anteflexion is often associated with the virginal type of dysmenorrhœa or, if acquired in later life, frequency in micturition.

Conditions simulating a Forward Displacement.—In certain cases, especially to one not very familiar with pelvic examination, or in a patient who is rather intolerant of examination, the practitioner may find it difficult to decide whether the uterus is anteflexed, or whether there is a fibroid or ovarian tumour in front of it, or a mass due to anterior cellulitis is present.

Fibroid Tumour of the Uterus.—A small fibroid situated on the anterior surface of the body of the uterus, more especially just above the level of the internal os and sub-peritoneal in nature, may simulate very closely an anteflexed uterus, particularly if the fibroid is solitary and menstruation is normal (see p. 162).

When there is any doubt, the patient may be examined under an anæsthetic, or the sound may be used, in which case it will be noted that its point cannot be passed into the tumour.

Ovarian Tumour.—It is only rarely that an ovarian tumour lies in the utero-vesical pouch. When it does so, it is generally a small dermoid whose pedicle has become twisted, and it may be mistaken for the anteflexed body of the uterus (see p. 145).

A more careful and minute examination will in most cases disclose the fact that the swelling felt in front of the cervix is separate from the uterus. It may be possible to move it bimanually independently of the uterus, or pressure on it from above is not communicated to the cervix. The sound cannot be passed into the tumour, and by its means the uterus can be separately moved.

Anterior Cellulitis.—If the cellular tissue in front of the uterus becomes infected an effusion follows, with the result that a swelling forms in front of the cervix, which resembles, in some respects, an anteflexed uterus. In this case, if the body of the uterus cannot be outlined, such a mistake as that indicated may be made. If the sound, however, be introduced it will be found to pass away from the swelling, which itself will very likely

be tender, and there may be a history of some cause for the infection, whilst the general symptoms and signs may give additional assistance in the diagnosis (see p. 239).

THE UTERUS IS DISPLACED BACKWARDS (RETROVERSION AND RETROFLEXION)

We take these two displacements together, because retroflexion is merely a further stage of retroversion.

Backward displacement of the uterus may be due to an increase in its weight, as for instance in pregnancy, in subinvolution, or when it is the seat of a fibroid tumour or an adeno-myoma. The displacement may also be due to a tumour, such as an ovarian cyst pressing on its anterior surface, to the yielding of its ligaments as the result of natural weakness, trauma, or childbirth, to perimetric adhesions pulling it back, to a congenital malposition, or to sudden and deep inspiration following a blow or fall, resulting in the intra-abdominal pressure being applied to its anterior surface.
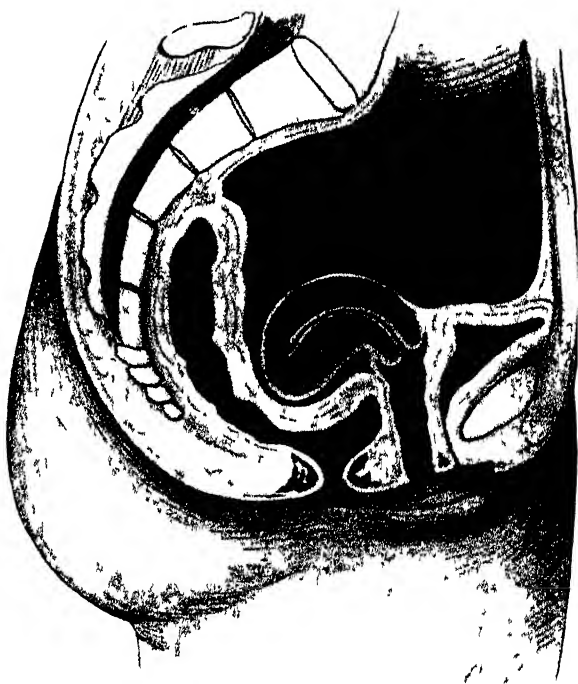
On vaginal examination the cervix points forwards and a little upwards, the body of

FIG 82.—RETROFLEXION.

the uterus is absent on bimanual examination, whilst a swelling of its size and consistence can be felt in the pouch of Douglas (Fig. 82). If the retroflexion is marked, there is a receding angle between the swelling and the cervix, which may give rise to the idea that they have no connection with one another. Rocking of the cervix may move the swelling in the pouch of Douglas.

Finally, the uterine sound can be passed into the swelling, which will tell the practitioner in which direction the body of the uterus is lying, but he will do well to realize that this instrument is very dangerous unless used under an anæsthetic with the greatest care and circumspection.

Moreover, if the swelling, uterine or otherwise, in Douglas' pouch is tender, efficient vaginal palpation may be impossible.

In this event the doctor should advise his patient to be examined under an anæsthetic, but this method of investigation must not be too lightly undertaken unless the practitioner is fairly confident of his diagnostic powers, since apart from the very slight, but nevertheless always present, danger of the anæsthetic itself, the patient will submit very unwillingly to a further examination of this kind, supposing the practitioner fails to diagnose the condition when he has this additional opportunity.

Conditions simulating a Backward Displacement.—The following is a list of the conditions which, forming a swelling in the pouch of Douglas, more or less simulate a backward displacement of the uterus :—

Fæces, fibroid of the posterior wall of the uterus, ovarian tumour, chronic sclerotic salpingitis, hydrosalpinx, pyosalpinx, hæmato-salpinx, an effusion of pus, blood, or serum in the pouch of Douglas, posterior cellulitis, tumour of the rectum or colon, and a misplaced kidney.

In making a diagnosis the first point to bear in mind is that in a backward displacement of the uterus the cervix is invariably tilted forwards so that the external os looks down the canal or towards the anterior vaginal wall. It follows therefore that if a swelling is detected in the pouch of Douglas and the cervix is pointing in the normal direction that swelling is not the body of the uterus. If, however, the cervix is pointing forwards, then the swelling in the pouch of Douglas may or may not be the body of the uterus.

We will divide such cases into two groups—

1. Those in which the cervix points backwards.
2. Those in which the cervix points forwards ; and this latter group may be further subdivided into—
   (a) Those in which the swelling moves with the sound.
   (b) Those in which the swelling does not move with the sound.
   (c) Those in which the sound cannot be moved.

CERVIX POINTS BACKWARDS.—*Fæces.*—Scybalous lumps form the commonest swellings to be found in the pouch of Douglas. Being plastic, and so retaining the impress of the finger that has palpated them, very little difficulty will be experienced in arriving at a correct diagnosis.

Very rarely indeed a similar sign may be detected when an ovarian dermoid of semi-solid consistence is pressed upon.

A thorough purge will enable the practitioner to settle the question in the course of a few hours.

Fibroid in the Posterior Wall of the Uterus.—In this case the cervix will be in its normal position, and a bimanual examination being made, the body of the uterus is revealed in its normal position. If it is impossible to make such an examination, the condition may be mistaken for a retroflexion (Fig. 83). The sound passing forwards will show that the swelling in the pouch of Douglas is not the body of the uterus, and it will most likely pass further than normal. With the sound in position it is easy to identify the body of the uterus, when the fibroid may be felt to be attached to its posterior wall.

The swelling is hard, not tender, and moves with the uterus˙ (see p. 162).

Ovarian Tumour.—The tumour may be cystic or solid. It is in the former case when the cyst wall is very tense that a mistaken diagnosis is likely to occur. If the tumour is not adherent it will be noted that it can be moved more or less without having any

FIG. 83.—MYOMA LYING BEHIND ANTEVERTED UTERUS.

effect on the cervix (see p. 143), which is in its normal position, whilst bimanually the body of the uterus will probably be felt separate from the tumour. If doubt still remains, the passage of the sound under an anæsthetic will dispel it.

Chronic Sclerotic Salpingitis.—In this variety of salpingitis the uterine tubes are much thickened and adherent. Follicular cysts are frequently situated in the ovaries, and the whole appendage is adherent to the back of the uterus and broad ligament, and often also to the omentum, pelvic colon, and rectum. The net result is a conglomerate mass which, starting from the side or sides of the uterus, passes down

wards into the pouch of Douglas. In such cases there is a history of some pelvic inflammation, often recurrent in nature, dating maybe from a miscarriage, labour, or attack of gonorrhœa. The mass is more or less fixed and tender (see p. 225).

Hydrosalpinx.—The exact diagnosis of a hydrosalpinx from a chronic pyosalpinx or ovarian cyst is at times practically impossible, and as a matter of fact it is most often mistaken for the latter. Its outline is, however, more elongated than an ovarian cyst, and it cannot be moved as can a simple ovarian cyst free of adhesions (see p. 143).

As a rule, with a hydrosalpinx there is a history pointing to old pelvic peritonitis which is absent with an ovarian cyst. Hence in a virgin a cystic swelling behind the uterus is more likely to be due to the latter condition.

Pyosalpinx.—A tube distended with pus may occupy the pouch of Douglas and cause difficulty in diagnosis. The history in such a case should be of some assistance, since the condition is nearly always due to septic infection of the uterine tubes following a labour, abortion, or gonorrhœa.

The patient will give a history of acute pelvic pain associated with great abdominal tenderness and of the symptoms and signs of fever. She may have, or have had, painful or difficult micturition and defæcation (see p. 67).

Such a patient may have been ill on and off for years, and—this is very important—may give a history of recurring attacks of acute pelvic pain and malaise signifying short and subacute attacks of pelvic peritonitis.

Vaginal examination of such a case would disclose an irregular somewhat hard swelling occupying the pouch of Douglas, very tender to the touch. A tubal swelling extends into the lateral fornix, and if the disease is one-sided, which is unlikely, the swelling may be detected extending into that lateral fornix alone. On the other hand, the disease is generally bilateral ; and moreover, the two pus tubes are frequently adherent to one another at the back of the uterus, in which case the swelling may appear to be one, although both uterine tubes are involved (see p. 153).

It is in these cases, when an adequate pelvic examination cannot be made, that the sound is of value, since if it passes forwards it is evident that the swelling is not the body of the uterus, and the material for a diagnosis is completed with this knowledge, added to the history and the irregular shape of the swelling in the pouch of Douglas. The fact that the swelling is fixed and tender, although of some assistance, does not exclude the possibility of its being the uterus, since this may be fixed by pelvic peritonitis.

Ovarian Abscess.—An ovarian abscess is usually secondary to salpingitis, when a collection of pus may form in the ovary as well as in the tube (tubo-ovarian abscess). Occasionally the ovary alone suppurates. The general features of the mass formed by an ovarian abscess are similar to those of salpingitis in general, but it tends to be more fixed and to be markedly lateral to the uterus, resembling in this respect pelvic cellulitis, for which it has often been mistaken (see Fig. 101, also p. 47).

Hæmato-salpinx.—The commonest cause of hæmato-salpinx is extra-uterine gestation. The history in such a case will most likely be of the greatest assistance (see p. 69).

The patient will have incurred the chance of pregnancy as a rule some six weeks before she begins to complain. She may, of course, seek advice before this, or even as late as three months ; but very rarely are the symptoms postponed beyond the sixth week following impregnation.

The patient will also most likely be sterile, or will not have had a child for some years.

The chief complaint will be that of a pain in one or other side of the pelvis, and with such a history as is given above the patient will state that she has missed one or more periods, unless she seeks advice before the next period is due ; perhaps that she has had morning sickness, and that her breasts have become larger and tender. Additional facts of much practical importance would be that since the onset of the pain there has been an irregular loss and perhaps the discharge of a membrane.

As in most cases the hæmato-salpinx is associated with a tubal abortion or rupture, there may be symptoms and signs of free blood in the peritoneal cavity (see pp. 137 and 227).

On pelvic examination the cervix is found to be normal in position, softer than normal, and an irregular tender swelling is felt in the pouch of Douglas.

Hæmato-salpinx due to causes other than extra-uterine gestation is so rare that a few words concerning it will suffice. It may be due to the giving way of a vessel in a pyosalpinx, when the symptoms and signs would correspond to this condition ; and it may be due to an acute inflammation of the tube, the nature of which cannot be diagnosed. The most frequent cause other than tubal gestation is that of atresia in some part of the genital canal, when the chance of mistaking the swelling for a uterus displaced backwards is very remote, since the lesion is nearly always a congenital one due to an imperforate hymen or vagina, when such difficulty in diagnosis would not be likely to occur. In those rare cases in which the cervical canal has become obliterated from sloughing due to disease or traumatism, such a mistake as that under discussion might conceivably arise. Here again an examination under

an anæsthetic would disclose the uterus on bimanual examination, and an attempt to pass the sound would end in failure.

Effusion of Serum, Pus, or Blood into the Pouch of Douglas.—Pelvic peritonitis may result in an effusion of serum or pus which collects in the pouch of Douglas.

As pelvic peritonitis is usually due to salpingitis following a septic labour or miscarriage, gonorrhœal infection, the passage of a sound, or the performance of some operation, the history may give some clue to the nature of the swelling. The disease commences suddenly, is of an acute nature, and is marked by a sharp rise of temperature and other symptoms and signs of fever, while there is well-marked abdominal pain and tenderness. On vaginal examination a very tender swelling is felt in the pouch of Douglas, indefinite in form and pushing the uterus forwards and fixing it.

The differential diagnosis between serum and pus will be decided by the progress of the illness. If the effusion is serous in nature, the symptoms will generally disappear so that in a week or ten days the tempera-
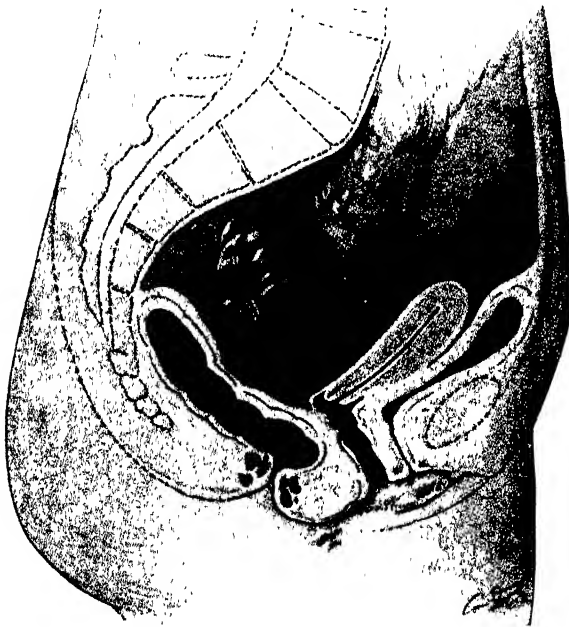
FIG. 84.—CARCINOMA OF THE PELVIC COLON LYING BEHIND THE UTERUS.

ture will be normal, and swelling in the pouch of Douglas will have vanished. Occasionally, however, the serum may become congested, forming a fluctuating tumour lying behind the uterus (encysted serous perimetritis) almost exactly resembling an ovarian cyst.

If pus is present, the severity of the symptoms and signs increases; and if it is not evacuated, it will eventually discharge through the rectum, or very exceptionally through the vagina.

An effusion of blood in the pouch of Douglas is nearly always due

to rupture of a tubal gestation.   For the symptoms and signs of hæmato-cele, see pages 137 and 227.

Posterior Cellulitis.—This is a rare disease in which the cellular tissue between the vagina and rectum and round the rectum becomes infected, with the result that the effusion which follows forms a swelling adjacent to the pouch of Douglas, which on a superficial examination may be mistaken for the body of the uterus.   In this case the swelling will be tender, and if a rectal examination is made, the infected cellular tissue will be felt as a mass extending in front of and at the side of the rectum and sometimes right round to its back (see p. 233).

Tumour of the Colon or Rectum.—If the swelling is due to malignant disease of the rectum just above the pouch of Douglas, the patient will complain of intermitting diarrhœa and constipation with pain and occasional blood in the stools.

Rectal examination will reveal the condition.   If the growth is situated in the pelvic colon, which itself has fallen into the pouch of Douglas, the diagnosis is more difficult, since the ulcerated surface cannot be reached by rectal examination ; and as the tumour is often adherent to the uterus, it may be mistaken for the body of a retroflexed uterus, though more often it is misinterpreted as an inflammatory mass, probably due to salpingitis, pressing on the rectum and so causing diarrhœa.   In such a case a sigmoidoscope may disclose the nature of the disease (Fig. 84).

Carcinoma of the cæcum may be adherent to the uterus and the right appendages, in which case a mistaken diagnosis of retroflexion or of a fibroid or salpingitis might be made (see p. 178).   It occurs, however, more often in patients of advanced age, in whom retroflexion giving rise to symptoms is most unlikely, in whom salpingitis is most uncommon, and in whom fibroids never make their first appearance.

In these cases there is no history of hæmorrhage or acute inflammation such as is usually obtained in such conditions.   The disease is insidious and remarkably free from symptoms.

Carcinoma of the transverse colon may become adherent to the uterus in persons with enteroptosis.   The position of the growth may then mislead the practitioner as to its true nature, being very likely to be mistaken for a fibroid.   Symptoms pointing to involvement of the bowel are more likely to be present with this growth than with cæcal carcinoma, whilst symptoms usually associated with fibroids will be absent.

Misplaced Kidney.—A kidney is rarely found in the pouch of Douglas ; if so, it is due to congenital misplacement.   Such displaced kidneys may be solitary.

Inability to feel the kidney in the loin, together with the fact that the ureteric catheter passed an abnormally short distance, might suggest the

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diagnosis ; but usually the misplacement of the kidney will not be diagnosed until the abdominal cavity is opened, and when so situated in the pelvis it should always raise a doubt as to the existence of a fellow, for which a search should accordingly be made.

CERVIX POINTS FORWARDS.—In this case the swelling felt in the pouch of Douglas may be either the body of the uterus or any of the aforementioned swellings complicated by backward displacement of the uterus.

The problem of distinguishing retroversion with retroflexion of the uterus from a retroverted uterus complicated by a tumour lying behind it may be a very difficult one, and in some cases it is impossible to do so without an anæsthetic or the passage of a sound (Fig. 85).

We have already pointed out that the sound is a dangerous instrument, and its use for diagnostic purposes should be strictly limited. There are certain conditions in which it is not permissible to use it in this way. If the patient has missed a period, or there is any reason to suspect that she is pregnant, the sound should not be used, neither should it be used in any acute septic condition of the pelvic organs, when carcinoma of the body is suspected, or when there is an offensive discharge.
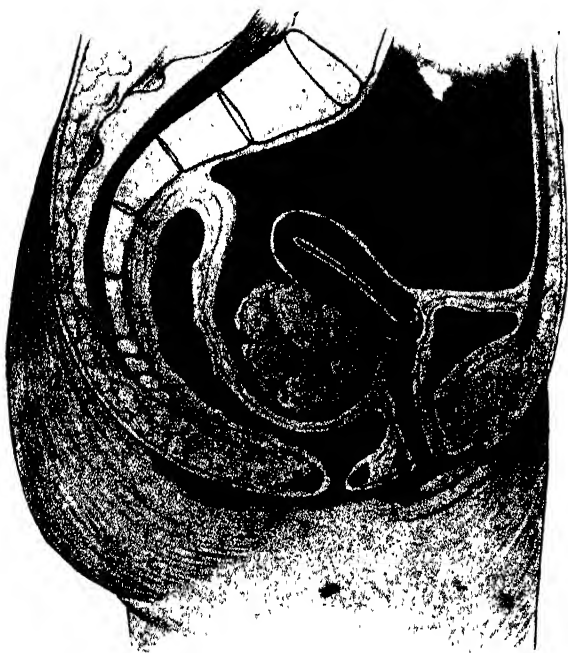
FIG. 85.—MYOMA LYING BEHIND RETROVERTED UTERUS.

Extra-uterine Gestation.—A very important and at the same time difficult combination to diagnose is that of a backward displacement of the uterus associated with a pelvic blood effusion due to tubal gestation.

In such a case, as certain of the symptoms and signs of pregnancy are present, the practitioner will naturally not venture to pass a sound ; and a very common error is to take the condition for one of a retroverted gravid uterus with a threatened or incomplete miscarriage. Such a mistake may lead to very serious results.

In such conditions certain symptoms and signs are similar.

Retroverted Gravid Uterus.	*Extra-uterine Gestation with Retroversion.*
Hæmorrhage from the vagina.	Hæmorrhage from the vagina.
Pelvic and abdominal pain.	Pelvic and abdominal pain.
Perhaps the passage of a membrane.	Perhaps the passage of a membrane.
Perhaps retention of urine.	Perhaps retention of urine.
Perhaps symptoms of severe loss.	Perhaps symptoms of severe loss.
Patient missed one or more periods.	Patient missed one or more periods.
Cervix soft.	Cervix soft.
Breasts enlarged and tender.	Breasts enlarged and tender.
Morning sickness.	Morning sickness.
Soft tender swelling in pouch of Douglas.	Soft tender swelling in pouch of Douglas.

There is nothing distinctive about the vaginal hæmorrhage unless it be the quantity. If the loss is severe the condition is practically certain to be one of intra-uterine gestation; but it is not in such cases that difficulties arise, since a severe loss is practically always followed by, or associated with, the discharge of the ovum from the uterus.

The difficulty rather lies with those cases that may have been losing slightly for weeks before seeking advice, which we have known to occur with extra-uterine as well as intra-uterine gestation.

The abdominal pain of an intra-uterine miscarriage may be acute, but it is never so acute as that associated with a well-marked case of intra-peritoneal hæmorrhage.

Recurrent attacks of pain with quiet intervals are more often associated with contractions of the uterus in an intra-uterine miscarriage, and if present with an extra-uterine gestation signify repeated intra-peritoneal bleeding (incomplete tubal abortion), the other symptoms of which would be sufficient to make a diagnosis.

When an extra-uterine gestation ruptures or aborts the uterine decidua or part of it is expelled. This membrane on a casual examination may be taken for the membranes of the ovum, and an incorrect diagnosis made. A careful examination will, however, show the structure to be quite distinct, and we will take it for the purposes of comparison that each membrane passed was perfect of its kind.

Membranes of an Ovum.	*Decidua of Extra-uterine Gestation* (Fig. 86).
Oval in shape.	Triangular in shape.
Outside markedly rough.	Outside slightly rough.
Inside smooth from amnion.	Inside shows the mouth of glands and is slightly elevated.
Size that of supposed gestation.	Size smaller than that of supposed gestation.
One hole through which embryo escaped.	A hole at each corner—two for the uterine tubes, and one for internal os.
On microscopical examination chorionic villi and decidual cells.	On microscopical examination decidual cells only.

The identification of this membrane may be of the greatest importance, since it may be the principal factor in deciding the nature and treatment of the complaint.

A much more difficult distinction to make is that between the decidual
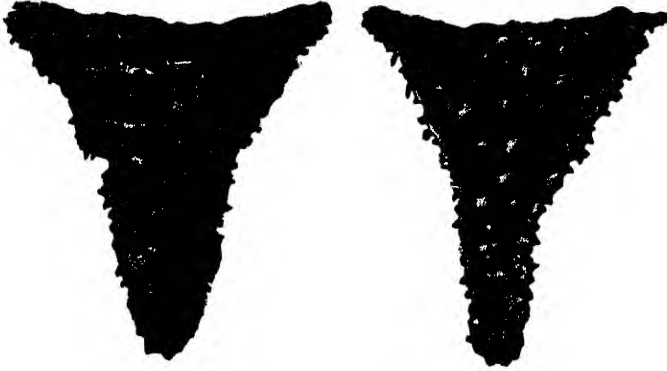
FIG. 86.—OUTSIDE AND INSIDE OF A UTERINE CAST IN EXTRA-UTERINE GESTATION.

cast of extra-uterine gestation and that sometimes expelled together with the early ovum in intra-uterine pregnancy. The shape of the cast is similar in each case, but the inner surface in the case of intra-uterine pregnancy is much more vascular and "bossy," being thrown into a
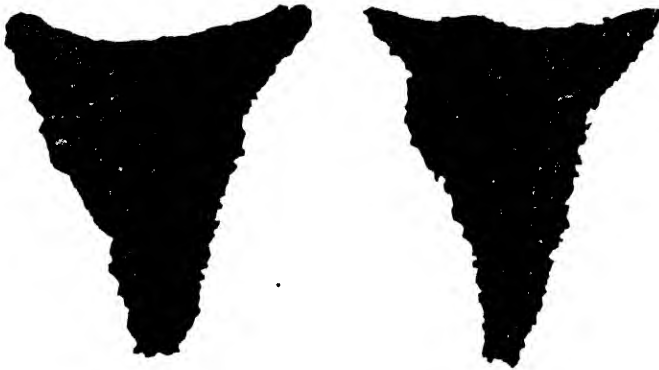
FIG. 87.—OUTSIDE AND INSIDE OF A CAST FROM A CASE OF VERY EARLY INTRA-UTERINE PREGNANCY.

series of elevations bounded by more or less deep sulci. One of these elevations larger than the rest contains the gestation. Casts such as these are very rare, and because an intact very early pregnancy may be found therein, should always be submitted to microscopical examination, quite apart from the propriety of doing so in order to make a diagnosis (cp. Figs. 86 and 87)

The first symptom in nearly all cases of an incarceration of the retroverted gravid uterus is retention of urine or frequency due to the incontinence of retention. This results from the tilted cervix becoming pressed against the urethra or neck of the bladder. Rarely the collection of blood which has escaped into the pouch of Douglas in cases of a ruptured tubal gestation or abortion becoming encysted (pelvic hæmatocele) pushes the uterus forwards, and in this way the urethra or neck of the bladder may be pressed upon and retention results. The cervix of an incarcerated gravid uterus is tilted upwards and forwards, whilst in a hæmatocele the whole uterus is pushed forwards and the cervix looks down the canal.

In a healthy pregnant woman, a loss of blood from the uterus sufficient to cause the signs and symptoms of hæmorrhage would inevitably result in a miscarriage.

In extra-uterine gestation the loss of blood due to the separation of the decidua is so slight that the symptoms and signs of hæmorrhage, if present, could not possibly be due to it and would therefore indicate internal bleeding.

It will thus be seen that when the cervix is easy to reach, the swelling in the pouch of Douglas is of a doughy and ill-defined nature, and the symptoms and signs of bleeding are greater than are warranted by the amount of blood that has escaped by the vagina, extra-uterine gestation is most likely to be the source of the trouble (see p. 227).

If any doubt still exists, the patient should be anæsthetized, when a bimanual examination may disclose the enlarged body of the uterus in its normal position or retroverted as the case may be.

If there is still a doubt, and the surgeon is prepared on the spot to open the abdomen if necessary, the diagnosis may be settled by passing a sound or dilatation of the cervix.

The practitioner must remember that whilst with the facts as here set out plainly on paper it would appear difficult to make a mistaken diagnosis, the evidence points the other way ; and whilst we have met with many cases of extra-uterine gestation which the practitioner has mistaken for a retroverted gravid uterus, and has endeavoured to replace, we have also seen several in which, on the passage of the membrane, an incomplete abortion has been diagnosed, and the patient curetted for the persistent bleeding, in both cases with alarming results.

THE UTERINE SOUND AS AN AID TO DIAGNOSIS.—This instrument may be of considerable assistance in arriving at a decision if its use is not contra-indicated.

We may divide such cases into three groups—

1. Cases in which the swelling moves with the sound.
2. Cases in which the swelling does not move with the sound.
3. Cases in which the sound cannot be moved.

The Swelling moves with the Sound.—We have already pointed out the cardinal signs of a typical retroversion and retroflexion of the uterus (see p. 203), when a satisfactory examination can be made, and the body of the uterus is not tender and can be moved by the finger or by the sound.

In certain cases of backward displacement, however, the body of the uterus is very tender from congestion, and the pain may be too severe to allow sufficient manipulation to detect its mobility. In such cases the patient will complain of much pelvic aching and bearing down, whilst her menstruation will be excessive and painful. The fact that the cervix points forwards shows the direction of the body of the uterus, and after a few days' treatment by rest, saline aperients, and hot douches, the congestion may be so relieved that the swelling can be moved either with the fingers or sound, and so identified as the body of the uterus ; for if the swelling felt in the pouch of Douglas is the body of the uterus it may be moved when the cervix is sharply pushed backwards, whilst if it is a tumour separate from the uterus it would not do so.

A fibroid of the posterior wall of the uterus may retrovert this organ or be associated with a retroverted uterus.

In this case the sound passes backwards, and on manipulating it so as to restore the uterus to its normal position (see p. 355) the fibroid will disappear from the pouch of Douglas, being dragged up by the uterus, and when in position the body of the uterus may now be palpated with the fibroid projecting from its posterior surface. If a satisfactory pelvic examination is impossible, an examination under an anæsthetic may be necessary to clear up the nature of the swelling.

It will be remembered that fibroid tumours are rare before 30 years of age and usually cause menorrhagia.

The Swelling does not move with the Sound.—If the swelling in the pouch of Douglas does not move with the sound, this shows that it is not connected with the uterus. The swelling in this case may be due to fæces, to an ovarian tumour, a dilated uterine tube, a tumour of the bowel, colon, or rectum, or to a misplaced kidney lying behind a retroverted uterus.

All these conditions have already been dealt with and their differential diagnosis discussed (see pp. 209 and 223).

The Sound cannot be moved.—This shows that the uterus is fixed and is directed backwards, although it does not prove that the swelling in the pouch of Douglas is necessarily the body of the uterus. It may need an anæsthetic to prove this. The practitioner must never attempt to force a fixed uterus into its normal position by means of the sound ; in doing so, he may rupture adhesions or a diseased uterine tube with fatal results.

THE UTERUS IS DISPLACED SIDEWAYS (LATEROVERSION).

On a vaginal examination being made the uterus may be found to be directed to the right or left side of the pelvis and a swelling may be felt pushing it over or not, as the case may be. The swelling may be a tumour, such as a parovarian cyst or broad-ligament fibroid ; it may be due to an effusion of blood into the broad ligament or to an inflammatory swelling therein.

UTERUS DISPLACED BY A SWELLING.—*Broad-Ligament Fibroid.*—There are two varieties of fibroids which may be felt in the region of the broad ligament. One is known as the true broad-ligament fibroid, which arises from the muscle tissue to be found in the broad ligament, whilst the other is the false broad-ligament fibroid, arising in the lateral wall of the uterus and projecting into the broad ligament.

Unless a distinct interval between the body of the uterus and the tumour can be felt, which is but rarely the case, it is impossible to diagnose clinically which variety is present, but this from the point of view of treatment is of no consequence.

On vaginal palpation the tumour feels hard, and, as a rule, appears to form part of the uterus, and to more or less fix it. The swelling is not tender, and there is nothing in the history which will in any way help in the diagnosis except the age, since such a tumour would not likely be found in a person under 30 years old (see p. 162).

Broad-Ligament Cyst.—A cyst of the broad ligament has similar clinical characteristics to a broad-ligament fibroid, except that it is not so hard, although if it is very tense this difference may not be appreciable.

The age of the patient might prove of assistance in the diagnosis, since these cysts are more common in women under 30 years of age.

Pelvic Hæmatoma.—An effusion of blood into the broad ligament is known as a pelvic hæmatoma, and in nearly every case it will be found to be due to the rupture of a tubal gestation, the blood escaping into the broad ligament instead of into the peritoneal cavity.

The history of such a case is quite typical, and corresponds to that already given on pages 136 and 227 for pelvic hæmatocele.

In this case, however, the symptoms and signs of internal bleeding are not so marked as are those of intra-peritoneal bleeding associated with a pelvic hæmatocele (see p. 69).

On vaginal examination the uterus is found to be displaced towards one or other side and more or less fixed by a doughy swelling in the broad ligament.

Inflammatory Tumours.—Pelvic cellulitis in the broad ligament as a rule follows septic labour or abortion, and the swelling which results can be felt from the abdomen rising above Poupart's ligament (see p. 237).

There will be a history, therefore, which may point to one or other

of these causes, and the patient will be suffering from the symptoms and signs of fever more or less marked. There will probably be some tenderness over the abdomen and pain on the affected side, and on vaginal examination the uterus will be found to be fixed and pushed over to one or other side by a very tender swelling occupying the lateral fornix and depressing the vaginal vault, so that the cervix will appear shorter on that side than the other.

UTERUS DISPLACED BUT NO SWELLING FELT.—In some cases on a vaginal examination being made the uterus is found lying to one or other side of the pelvis, and more or less fixed in this position, so that the lateral fornix of this side may be narrowed or obliterated. There is no swelling to be felt in the opposite lateral fornix, which is apparently normal.

This condition of affairs is generally due to the after-results of a pelvic cellulitis in which absorption of the effusion has not taken place, but instead organization has resulted. The fibrous tissue thus formed gradually contracts and pulls the uterus over to the side opposite to which it was pushed by the effusion. There will be a history which will point to an attack of acute pelvic cellulitis.

FIG. 88.—ELONGATION OF THE SUPRA-VAGINAL CERVIX.

The uterus may also be congenitally lateroverted, notably in those individuals in whom only one horn of the uterus is developed. Finally, in some cases the uterus may be markedly displaced to one side without obvious cause.

THE UTERUS IS DISPLACED DOWNWARDS.

The mechanism of downward displacement of the uterus is described on page 346, where it is shown that the condition popularly known as

" prolapse of the uterus " is really a displacement of the vagina, to which
the descent of the uterus *en masse* or of the cervix alone is secondary.

From the clinical standpoint there are five chief conditions capable
of being confused with one another : (1) descent of the vaginal vault with
the uterus *en masse* ; (2) descent of the vaginal vault with the cervix
alone, usually described as cases of elongation of the supra-vaginal
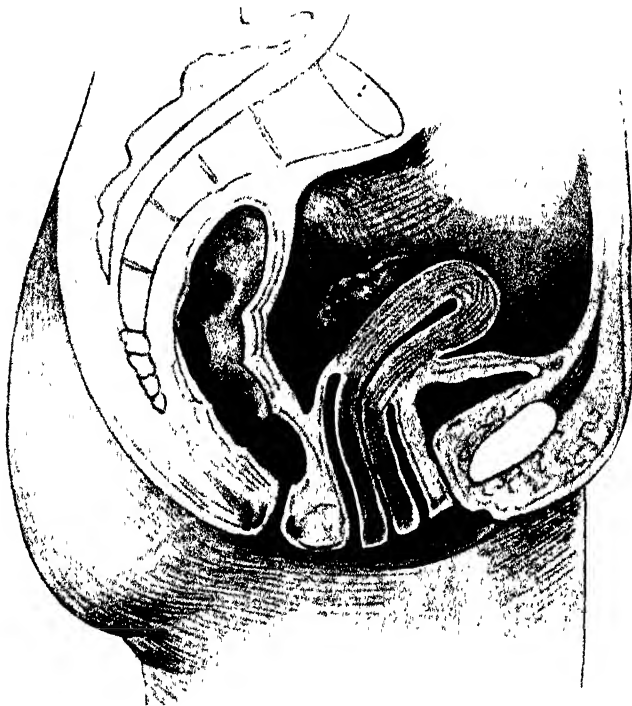
FIG. 89 —ELONGATION OF THE VAGINAL CERVIX.

cervix (Fig. 88) ; (3) elongation of the vaginal cervix (Fig. 89) ; (4) in-
version of the uterus (Fig. 90) ; and (5) protrusion into the vagina of
tumours originating either in the corpus, cervix, or vagina.

In making a diagnosis between these various conditions, the following
are the points to which attention must be directed :—

THE HEIGHT OF THE VAGINAL VAULT.—When inversion of the vagina
is accompanied either with descent of the whole uterus or the cervix alone,
the height of the vaginal vault is less than normal. When the uterus

as a whole is descending, the finger can press up the cervix and restore the normal arrangement of the parts, but when the cervix alone has descended this is not possible, owing to the elongation of the supra-vaginal cervix and the fact that the uterine fundus is already at its normal level.

In either inversion of the uterus or elongation of the vaginal cervix the vaginal vault is in its normal position.

Tumours protruding through the cervix, or growing from the cervix,
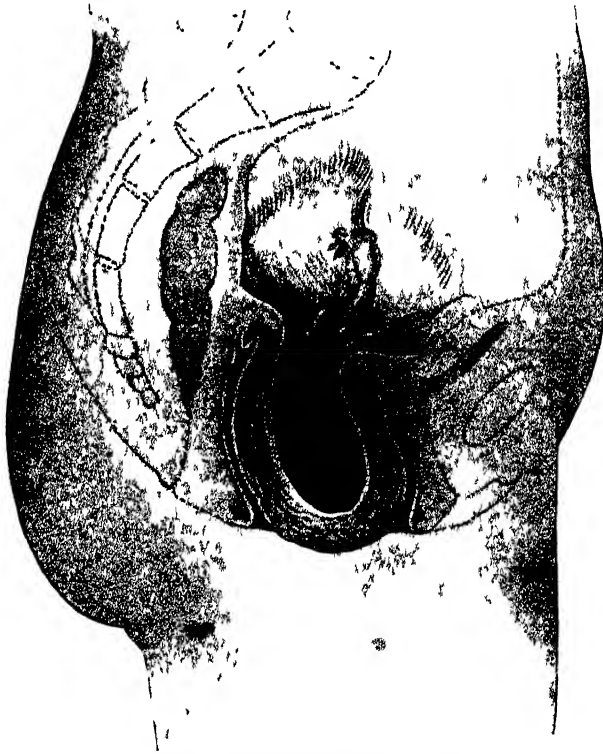
FIG 90.—INVERSION OF THE UTERUS.

also leave the position of the vaginal vault unaffected, except in those rare cases in which a large fibroid growing from one of the cervical lips invades the vault in front or behind and brings it down in front of it.

THE HEIGHT OF THE UTERINE FUNDUS.—When inversion of the vagina is accompanied by descent of the whole uterus, the fundus is below its normal level.

When inversion of the vagina is accompanied by descent of the cervix alone, the fundus is at its normal level and the supra-vaginal cervix is much elongated.

With elongation of the vaginal cervix the fundus is at its normal level.

With inversion of the uterus, the body of the uterus has disappeared either completely or partly from the abdomen, and the cupped depression may perhaps be felt on rectal examination.

In the case of tumours protruding into the vagina the height of the fundus varies. It may be unaltered, or it may be much higher than normal, owing to its being lifted up by the mass below it, or because the corpus contains a large part of the tumour or other tumours.
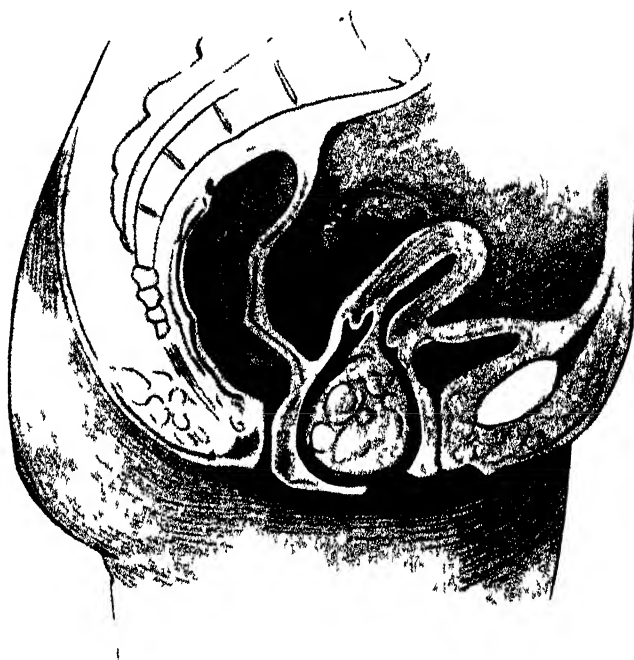
FIG 91 —A LARGE FIBROID POLYP EXTRUDED FROM THE UTERUS.

THE APPEARANCE OF THE DESCENDED PART.—In vaginal inversion and also in hypertrophic elongation of the cervix the external os is on the forefront of the descending part

In inversion of the uterus the vascular endometrium is seen, and two small depressions, one on either side, at the site of the entrance of the uterine tubes can be detected.

With a protruding tumour the appearance will vary according to its nature. With a cystocele or rectocele the vaginal wall presents (see p. 284).

PASSAGE OF THE SOUND.—In cases of doubt, further information may be obtained by passing the sound.

Thus, when the uterus as a whole accompanies the descent of the inverting vaginal vault, its cavity is not, as a rule, greatly elongated.

When, however, supra-vaginal elongation of the cervix has occurred, the cavity is markedly elongated.

Similar elongation is found with hypertrophic elongation of the vaginal cervix.

With uterine inversion, on the other hand, the sound either passes less than the normal distance or not at all, whilst with uterine or cervical tumours protruding into the vagina, increase in the length of the uterus may or may not be present.

THE UTERUS IS TURNED INSIDE OUT (INVERSION).

Inversion of the uterus is of two degrees—partial, when the body of the uterus has come through the cervix, and complete, when the whole of the uterus is turned inside out (Fig. 74).
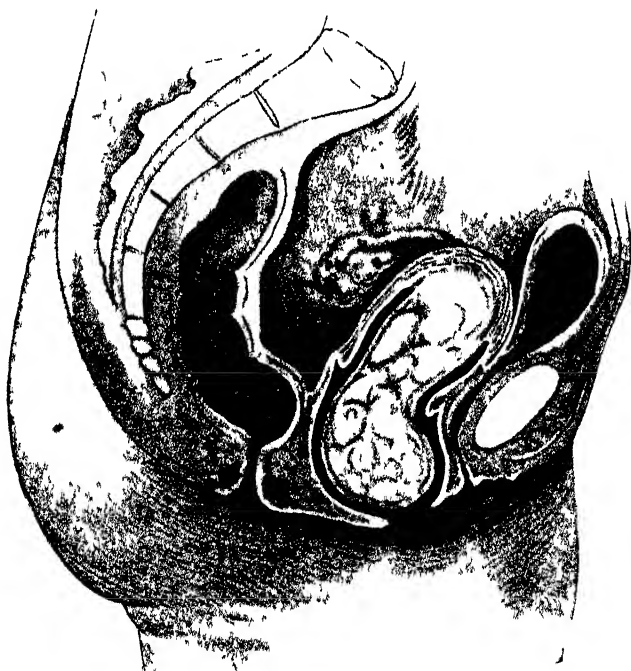
FIG. 92 —SESSILE SUBMUCOUS FIBROID IN PROCESS OF EXTRUSION.

The first thing noticeable on making a digital examination is that some structure is coming through the cervix, or that the cervix is absent,

its place being taken by a pendent mass. The anterior and posterior vaginal fornices are normal in length, and the pouch of Douglas is empty. On a bimanual examination being made, the body of the uterus is absent from its normal position, but if the patient is thin it is possible in some cases to feel a " cupping " of the fundus. The structure appearing in the vagina bleeds somewhat easily on palpation, is soft without being friable, and is a little tender. With such signs as these there would be no difficulty in arriving at a diagnosis, but such an examination as that detailed is not always so easily accomplished. The patient may be so fat or hold herself so rigidly that a bimanual examination without an anæsthetic is impossible.

CONDITIONS SIMULATING AN INVERSION OF THE UTERUS.—If the patient is difficult to examine there is a danger of mistaking the inversion for some other condition, the most likely being that of a fibroid polypus, or a sessile submucous fibroid in process of extrusion (Fig. 92). Such a mistake may lead to the most serious or fatal consequences ; as, for instance, if the body of an inverted uterus is amputated on the supposition that it is a fibroid polypus, fatal hæmorrhage may easily follow. Such an accident having occurred many times, it will be useful to compare these two conditions under discussion (Figs. 90 and 91) :—

Inversion.	*Fibroid.*
Uterine body absent bimanually.	Uterine body in normal position.
Presenting part is soft.	Presenting part is hard.
Presenting part bleeds easily.	Presenting part does not bleed easily.
Presenting part is tender.	Presenting part is not tender.
Cupping can be felt in region of fundus.	No cupping can be felt.

If it is impossible to make a proper bimanual examination, the sound will afford the additional help necessary for diagnosing the condition.

Inversion.	*Fibroid.*
A sound in the bladder and a finger in the rectum can be made to meet over the inverted portion of the uterus.	The sound and finger are prevented from meeting by the body of the uterus.
A sound in erte up the cervical canal passes a shorter distance than normal.	The sound passes farther than normal.

With regard to this latter use of the sound for diagnostic purposes, it must be remembered that the point might catch against the fibroid, or the fibroid might be adherent to the cervix, when in either case the sound would enter less than the normal distance.

If the practitioner is not, by the examination already detailed, satisfied as to the actual condition, he must have the patient very carefully examined under an anæsthetic (see pp. 216 and 288).

INVERSION DUE TO AN INTRA-UTERINE TUMOUR.—Rarely the cause
of the inversion may be a fibroid or sarcoma situated at the fundus of
the uterus ; in this case the presenting tumour has the characteristic
of a fibroid or sarcoma, as the case may be, but in addition there is, on
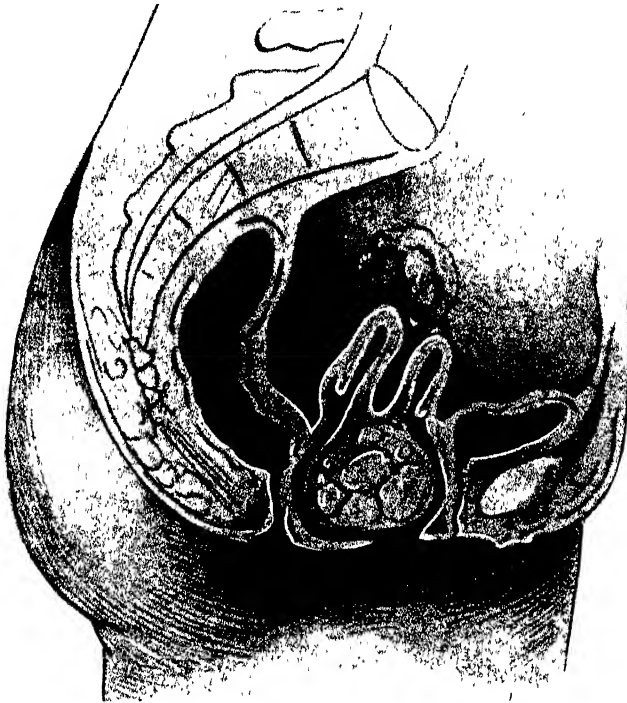
FIG. 93.—INVERSION OF THE UTERUS CAUSED BY A SESSILE SUBMUCOUS
MYOMA OF THE FUNDUS.

bimanual examination, a dimpling of the uterus, and the body is absent
from its normal position (Fig. 93).

THE DIAGNOSIS OF SWELLINGS IN RELATION WITH
THE UTERUS.

A swelling may be situated behind, at the side, in front, or all round
the uterus.

SWELLINGS BEHIND THE UTERUS.

A swelling behind the uterus may originate—

From the uterus.

From the uterine tube.

From the ovary.

From the bowel.

From the cellular tissue.

From other less common sources

Swellings behind the Uterus originating from the Uterus.—The swelling may be the uterus itself in retroversion or retroflexion (see
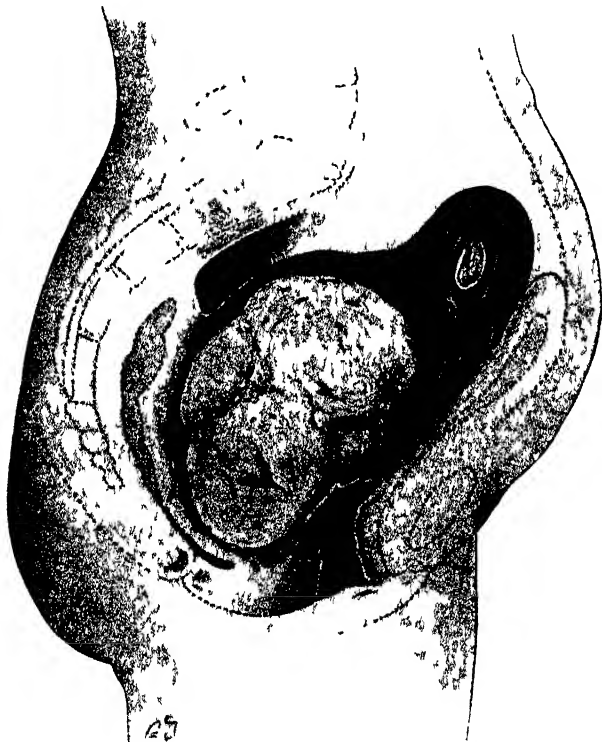
FIG. 94 —POSTERIOR CERVICAL MYOMA.

p. 203). It may also be a fibroid tumour springing from the uterus. Such a fibroid may be growing either from the back of the supra-vaginal cervix (Fig. 94), the back of the body of the uterus, or it may be a pedunculated tumour springing from any part of the surface of the uterus which is covered by peritoneum and which has gravitated into the pouch of Douglas (Fig. 95, see also p. 204).

The distinction between these various types of fibroid is not always possible. In all of them the uterine body is thrust forwards by the

mass behind it.   If the tumour springs from the supra-vaginal cervix its direct continuity with that structure is apparent on vaginal examination.

The diagnosis between a sessile growth of the posterior wall of the corpus and a pedunculated tumour is not always possible.   Whatever the site of growth, fibroids have certain common features by which they can be recognized.   They are hard to the touch and are smooth or nodular
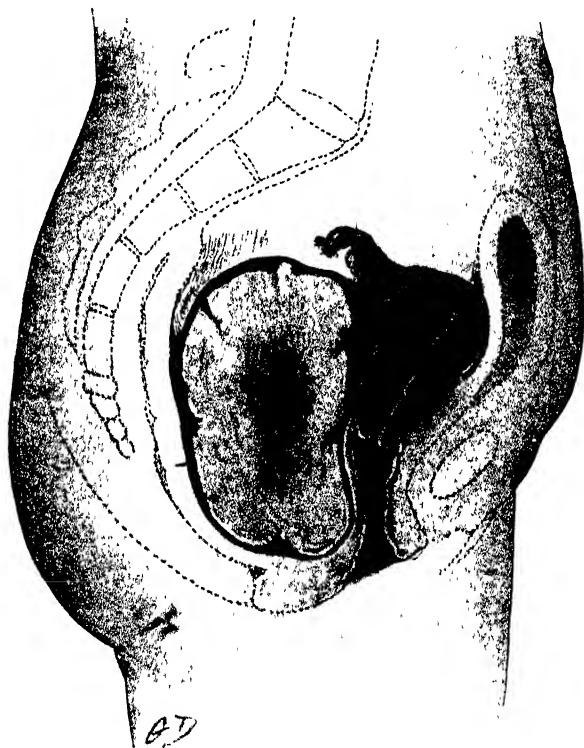
FIG. 95.—POSTERIOR PEDUNCULATED MYOMA IMPACTED IN THE PELVIS.

in outline.   They are not in the least tender unless some secondary change is occurring in or round them, and they move with the uterus and cannot be separated from it with the exception of subperitoneal fibroids with a long pedicle (see p. 162).

Swellings behind the Uterus originating from the Uterine Tube. —When the uterine tube enlarges it tends to curl downwards and inwards on account of its attachment to the meso-salpinx.   It thus comes to lie in a half coil round the ovary, with its distal extremity towards or in the pouch of Douglas (Fig. 96).

In this position it usually becomes adherent to the back of the broad ligament and uterus, to the pelvic colon and other coils of gut, and to the lower edge of the omentum.

The mass thus formed varies in consistence and fixity according to the processes at work. Since practically all enlargements of the tube are either directly the result of, or indirectly result in, inflammation, the tube is always more or less adherent.

Salpingitis.—It is least so in the case of a *hydrosalpinx*, which in many instances is a post-inflammatory condition. A large, thin-walled hydrosalpinx may, from its marked fluctuation and mobility, be mistaken

FIG. 96.—BILATERAL SALPINGITIS.

for an ovarian cyst. It is, however, a more elongated swelling, and may be present on both sides, which is a point always in favour of a tubal rather than an ovarian swelling.

Further, it may be tender and painful, whilst a simple ovarian cyst is usually quite insensitive.

On the other hand, salpingitis may lead to a cystic condition of both uterine tubes and ovary, a follicular retention cyst or cysts accompanying the hydrosalpinx or actually communicating with it (tubo-ovarian cyst). In such conditions an exact diagnosis may be quite impossible, though in general it may be said that if a past history of pelvic inflammation is obtainable, the swelling discovered is more likely to be due to salpingitis or salpingo-oophoritis than to a non-inflammatory growth.

A *pyosalpinx* forms a swelling much harder than a hydrosalpinx,

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because the inflammatory process being much more severe, the adhesions are much more massive and the structures adjacent to the tube are œdematous and thickened.

The mass formed as the result of tubal suppuration consists of the thickened or dilated tube, the thickened meso-salpinx and broad ligament, the ovary—often the seat of follicular cyst formation, intra-follicular hæmorrhage or intra-follicular suppuration—adherent omentum and adherent bowel, the wall of which is often in a condition of brawny inflammatory œdema. Frequently encysted collections of peritoneal fluid or pus are present also.

The mass thus formed may be a large one, rising as high as the umbilicus, or it may be entirely contained within the pelvis. It is often bilateral, in which case it may completely surround the back of the uterus. More commonly two swellings are felt, each lying postero-lateral to the uterus (see p. 152).

If the pyosalpinx be large, or if there be a collection of pus or serum in the peritoneal cavity, fluctuation may be detected on vaginal examination, but in many of the cases the swelling feels solid and hard.

The mass formed by tubal suppuration very closely resembles that due to extra-uterine gestation with a hæmato-salpinx ; for substituting blood for pus the constituents are the same (see p. 69). When the mass is very hard, an inflamed myoma or other solid neoplasm of the pelvis is simulated. The distinction is often difficult, but in general it may be laid down that the swelling due to a neoplasm is much more definite, especially as regards its upper border, while further it is present from the very outset of the symptoms, whereas an inflammatory mass defined enough to be mistaken for a neoplasm takes many days to form. When marked fluctuation is obtainable, the diagnosis may lie between a large pyosalpinx, a hydrosalpinx, and an inflamed or twisted ovarian cyst.

The distinction between pyosalpinx and hydrosalpinx is not always possible, but when pus is present the symptoms tend to be much more severe and the temperature markedly remittent ; further, a blood count may reveal leucocytosis.

An inflamed or twisted ovarian cyst forms a much more distinct tumour from the first ; moreover, there may be no obvious reason for the sudden attack of pelvic inflammation, whereas in pyosalpinx a recent history of child-birth or miscarriage or of a vaginal discharge is usually obtainable.

In chronic sclerotic salpingitis the tube is markedly thickened and adherent. A swelling is present, as in the types of salpingitis already described, and, as in them, it is conglomerate in nature. Chronic salpingitis is usually the outcome of an acute attack which has more or less settled down, and a history of such is as a rule obtainable. As

compared with hydrosalpinx, the swelling is much smaller and does not fluctuate. Its position is usually markedly to one side of the middle line, and its lower border does not, as a rule, reach to the bottom of the pouch of Douglas. As compared with a typical pyosalpinx, the swelling is much smaller and less tender, nor does it fix or displace the uterus to anything like the same extent.

It is, however, impossible always to distinguish between the various swellings that may be the outcome of salpingitis, for though in typical cases of hydrosalpinx, pyosalpinx, and chronic sclerotic salpingitis the peculiar features of each are distinctive enough to render correct diagnoses possible, yet there are gradation-forms the nature of which nothing short of an abdominal incision will disclose.

The indurated swelling of chronic salpingitis may be mistaken for a small fibroid. When situated on the left side it may simulate carcinoma of the pelvic colon, or when it is situated high up on the right side it may resemble the mass formed as the result of chronic appendicitis. Accurate diagnosis is often impossible before operating.

Extra-uterine Gestation.—One of the most important swellings that may lie behind the uterus is that due to extra-uterine gestation.

In the early stages of tubal gestation, before rupture of the gestation sac, the enlargement of the tube due to the pregnancy is so small as rarely to be detectable on vaginal examination.

As a rule, when rupture of the gestation sac occurs a definite swelling soon appears. This swelling is due to—

1. A collection of blood in the tube (hæmato-salpinx).
2. A collection of blood in the pelvis and lower abdomen (hæmatocele).
3. A combination of both of these.

A *hæmato-salpinx* forms a swelling which, beginning laterally, runs inwards and downwards towards the middle line until its lower pole may occupy the pouch of Douglas.

The size of a hæmato-salpinx varies greatly. In early tubal gestation before much intra-tubal bleeding has occurred it may be quite small, the swelling, indeed, being limited to a short segment of the tube. In such cases its presence is easily overlooked, the pregnancy being deemed intra-uterine on account of the obvious enlargement of the uterus.

On the other hand, a hæmato-salpinx may attain a considerable size, especially if the bleeding into the tube-lumen occurs slowly. In general, however, a very large swelling, and still more one that occupies the middle line, is probably due, in part or whole, to free blood in the pelvis (hæmatocele).

A *hæmatocele* consists of blood encysted by the pelvic walls, the back of the uterus, and broad ligaments and adherent coils of intestine and omentum, the latter usually forming the " roof " of the mass.

The blood, which is partly liquid and partly clotted, is generally under considerable tension, and the uterus is pressed forwards against the pubis, while on vaginal examination the posterior fornix is found to be tense and exquisitely tender.

It is a point to be noted, indeed, that of all painful pelvic conditions, none are so acutely tender as those in which free blood occupies the pouch of Douglas.

The mass, if small, does not rise above the pelvic brim, but when large may attain the level of the umbilicus or even higher. If intra-tubal bleeding has occurred as well as extra-tubal bleeding, a hæmato-salpinx will form part of the mass felt, or may be recognized as an extension of the swelling to one or other side of the uterus. The diagnosis of a case of extra-uterine gestation largely depends upon a history pointing to the probability of pregnancy, but there are other considerations which are important. The physical signs very closely resemble those of salpingitis, but sudden imflammation of the uterine tubes without an obvious exciting cause, such as recent septic miscarriage, labour, or gonorrhœa, is very uncommon. Hence when such physical signs are discovered without any evidence of recent bacterial infection of the genital tract the possibility of extra-uterine gestation is always to be taken into account.

In salpingitis marked fever is present from the outset, and the patient's face is often flushed. In extra-uterine gestation, on the other hand, the temperature is subnormal at first, though it subsequently rises, and the facial appearance suggests loss of blood.

Salpingitis is not commonly accompanied by bleeding from the uterus, and though the menstrual flow may be temporarily suspended this occurs *after* the onset of the symptoms.

In extra-uterine gestation, on the other hand, loss of blood from the uterus is the general rule, and if a period has been missed this *anteceded* the onset of the symptoms.

Rarer Tubal Swellings.—A mass lying behind the uterus may be due to a malignant growth of the uterine tube. Such an occurrence is very rare. The physical signs resemble those of salpingitis, but there is a relative absence of inflammatory symptoms. Periodic discharges of blood-stained watery fluid from the uterus sometimes occur. Hæmorrhage into the tube apart from tubal gestation, may take place notably in torsion of the tube. This is a very rare event. In the recorded cases a condition of hydrosalpinx has usually preceded the twist. The symptoms and signs resemble those of acute salpingitis, or still more those due to torsion of an ovarian cyst. Accurate diagnosis short of opening the abdomen is impossible (see p. 186).

Swellings behind the Uterus originating from the Ovary.—

Prolapse of the Ovary.—The normal ovary may occupy the pouch of Douglas, either because it has been carried downwards by a retroverted uterus, or because the ligaments of the ovary are relaxed and elongated, the uterus being in its normal position. The degree to which a prolapsed ovary gives rise to symptoms is very variable (see p. 33).

As has been pointed out, the ovary is markedly sensitive to compression, which it normally escapes, like the testis, owing to its free mobility. A prolapsed but otherwise healthy ovary therefore, if not tethered by adhesions or incarcerated under a retroverted uterus, usually gives rise to no trouble, and may easily escape notice if the examiner is not expert. When, however, the organ is fixed from either of the above-mentioned causes, more or less pain is evoked on palpation.

Most of the patients presenting themselves on account of this condition are married women complaining of dyspareunia.

An ovary when tethered or incarcerated in this position becomes abnormally obvious to the touch, and there is a tendency to regard it as enlarged when no enlargement is present.

It is to be remembered that the ovary varies in size in different individuals, frequently on the two sides and also at different times, the last fact depending on the degree of maturation of the follicle next to dehisce.

Small follicular cysts not to be deemed pathological are often present. Whether a prolapsed ovary can give rise to backache is very doubtful, but when abnormally tender from disease and fixed behind the uterus it may occasion pain during defæcation.

The distinction of a prolapsed ovary from the swelling formed by a slightly dilated or thickened tube may be difficult. Similarly, mistaken diagnoses may occur in the cases of chronic pelvic appendicitis or an early malignant disease of the pelvic colon.

These facts should be borne in mind whenever a patient presents herself with a small indefinite painful tumour lying behind the uterus.

Ovarian Tumours.—Cysts or solid tumours originating from the ovary proper, as distinct from broad-ligament cysts, often lie behind the uterus in their earlier stages. This is particularly so in the case of the more heavy neoplasms, such as dermoid (teratomatous) cysts, ovarian fibromata, and ovarian carcinomata, for gravity tends to place them there (Fig. 97).

As an ovarian tumour, and particularly a cyst, enlarges it tends to rise out of the pelvis, and ultimately not be palpable on vaginal examination. In other cases, however, whilst the bulk of the tumour lies in the abdominal cavity, a bossy projection remains in the pelvis, more or less forming a cast of its cavity (see also p. 143).

Cysts growing in the broad ligament are much more laterally placed,

except those originating in the outer third of the meso-salpinx, which, being pedunculated, may lie directly behind the uterus (Fig. 98).

An ovarian tumour in the pouch of Douglas has to be distinguished from the uterus itself and from tumours growing from the uterus. The most important point in such a diagnosis lies in the question as to whether or not the uterus can be palpated as distinctly separate from the tumour.

A further important distinction is that from tubal swellings. A

FIG. 97 —DERMOID CYST LYING BEHIND THE UTERUS.

neoplastic ovarian cyst or tumour differs from the generality of tubal tumours in being only slightly or not at all tender, also it is more movable, much rounder, and much more defined at its upper border. When, however, an ovarian swelling is inflammatory in origin, or is complicated by inflammation in or around it, the diagnosis becomes more difficult.

Thus certain ovarian cysts are the outcome of peri-oophoritis or salpingitis, follicular retention having occurred in consequence of non-dehiscence of and exudation into the follicles. Such cysts may coexist

with tubal distension, and even communicate with the uterine tube (tubo-ovarian cysts) (see p. 151).

An ovarian abscess large enough to form a big cystic swelling may lie behind the uterus, though this is not common (see p. 235).

Torsion or bacterial infection of a neoplastic cyst, by producing changes in it, alters the clinical findings so that salpingitis is mimicked, and the swelling may be regarded as entirely due to inflammation of the uterine tube or tubes.

In this regard it should be remembered that in inflammation or torsion
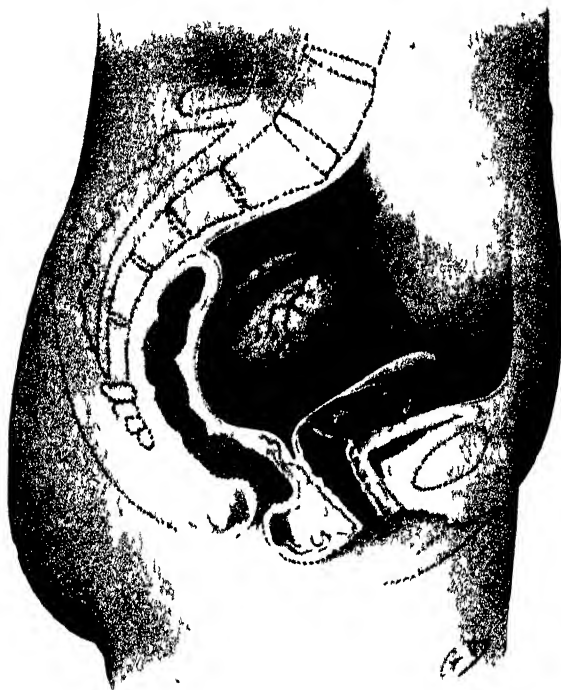
FIG 98 — PEDUNCULATED BROAD LIGAMENT CYST LYING BEHIND THE UTERUS

of a pre-existent tumour a definite swelling is present at the outset of the symptoms, whereas an entirely inflammatory tumour takes many days to become distinct and discrete.

Swellings behind the Uterus originating from the Bowel.— The importance of realizing how closely a tumour of the bowel lying behind the uterus may simulate a tumour originating in the uterus or its appendages is great, for such intestinal tumours are nearly always malignant, and delay in treatment may be fatal.   A carcinoma beginning

in the rectum at its upper part is felt through the posterior fornix of the vagina as an indefinite swelling which, unless a rectal examination is made, is easily mistaken for a tumour connected with the appendage, or for a small fibroid of the posterior uterine wall (see p. 178).

A class of case still more likely to be misinterpreted is that in which a carcinomatous growth beginning in the pelvic colon, transverse colon, or cæcum, prolapses into the pelvis, and adhering to the uterus or broad ligament, comes to resemble very closely a swelling originating in the genital organs (Figs. 99 and 100).

Thus a fibroid tumour of the uterus, an ovarian growth, or a swelling of the appendages may be simulated.

In such cases a digital examination of the rectum is often misleading,
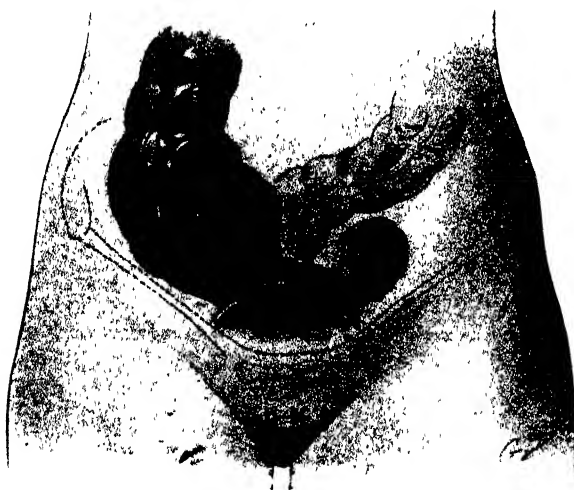
Fig. 99.—Carcinoma of the Cæcum adherent to the Right Uterine Cornu.

for if the rectal wall is not found to be diseased and the swelling lies in front and clear of it, the false conclusion that the mass is not intestinal in origin is supported.

The use of the sigmoidoscope may throw valuable light on the nature of the growth if it be capable of being reached. Careful attention to the history of the case is necessary, and a recital of symptoms referable to the bowel is very suggestive.

As has been pointed out, the inflamed appendix when lying in the pelvis may simulate salpingitis. In chronic pelvic appendicitis a mass may be formed which may lie behind the uterus, though far more commonly it is situated on its right side (see pp. 73 and 187).

Swellings behind the Uterus originating in the Cellular Tissue.
—Of such swellings that due to a posterior cellulitis originating from
some wound of the vagina or vaginal cervix is the commonest. The
swelling lies below the pouch of Douglas in the recto-vaginal septum,
and by a rectal examination can be felt to extend round the sides and
back of the bowel, the lumen of which is narrowed. A similar cellulitis
may be secondary to ulceration of the rectal mucosa.

The swelling of posterior cellulitis has to be distinguished from a
tumour or effusion in the pouch of Douglas, from which it differs
in its lower position, and the fact that it extends round the sides
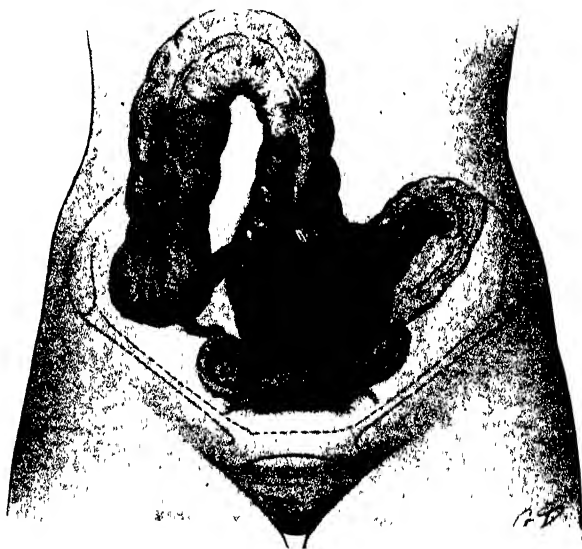
Fig. 100.—Carcinoma of the Transverse Colon adherent to the
Back of the Uterus.

of the bowel, whereas an intra-peritoneal tumour lies in front of it
(see p. 209).

Swellings behind the Uterus originating from Rare Sources.—
The consideration of these may be shortly dismissed. The kidney may
occupy the pelvis from congenital misplacement. A movable spleen has
gravitated behind the uterus and simulated an ovarian growth. Tumours
springing from the sacrum may be mistaken for solid neoplasms of
the uterus or ovary. All these conditions are exceedingly rare, and
in most cases an accurate diagnosis is impossible before opening the
abdomen.

SWELLINGS AT THE SIDE OF THE UTERUS.

A swelling at the side of the uterus may originate—

> From the uterus.
> From the uterine tube.
> From the ovary.
> From the bowel.
> In the cellular tissue of the broad ligament.
> From other rarer sources

Swellings at the Side of the Uterus originating in the Uterus.
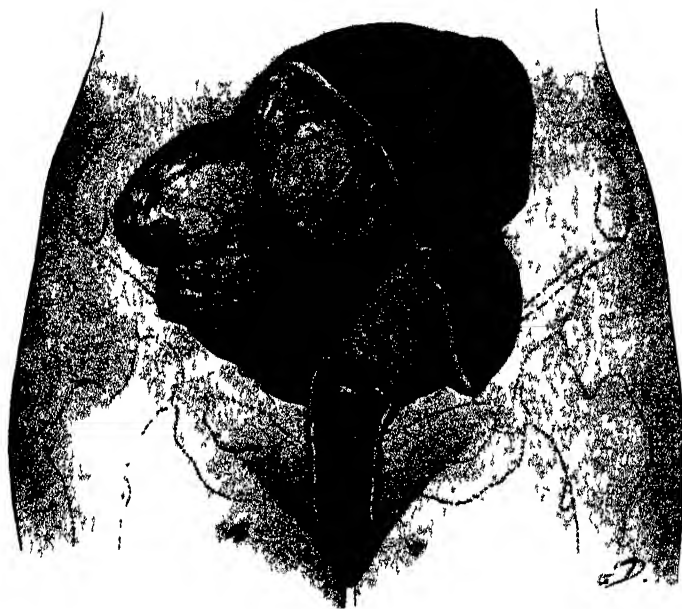
FIG 101.—BROAD LIGAMENT FIBROID.

—A swelling felt through the lateral vaginal vault may be the uterus itself in marked lateroversion This displacement may occur from several causes, which are discussed on page 215.

A fibroid tumour may spring from the side of the uterus and invade the broad ligament, while less commonly these tumours may actually originate from some of the unstriped muscle fibres there present.   Broad-ligament fibroids when nearly or entirely detached from the uterine body are difficult to diagnose from ovarian cysts and tumours, and from broad-ligament cysts, especially if they themselves are softened or are actually cystic (Fig. 101, see p. 215).

Swellings to the Side of the Uterus originating in the Uterine Tube.—As has been already pointed out, all swellings of tubal origin are partially lateral to the uterus, though as a rule they tend to get behind it. Occasionally the mass formed by a dilated tube may be entirely lateral. This is particularly so in the case of tubo-ovarian cysts or abscesses which tend to underburrow the broad ligament (Fig. 102)

The general characteristics of inflammatory swellings connected with the uterine tubes have already been dealt with, but it may here be remarked that when such a swelling lies completely lateral to the uterus
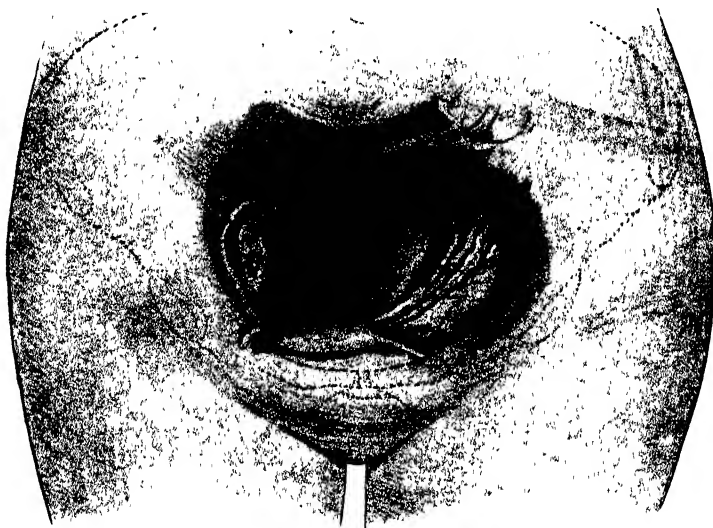
FIG. 102.—AN OVARIAN ABSCESS LYING WELL TO THE SIDE OF THE UTERUS.

a wrong diagnosis of broad-ligament cellulitis is very liable to be made (see pp. 67, 172, 185).

Swellings at the Side of the Uterus originating in the Ovary. —Ovarian tumours generally lie postero-lateral or entirely posterior to the uterus. There are certain conditions, however, in which such swellings may lie directly to the side of that organ. Of these the most important is an ovarian abscess which has a marked tendency to burrow under the broad ligament after adhering to its posterior surface (Fig. 102).

There can be no doubt that, in the past, a large number of cases of so-called broad-ligament cellulitis were in reality examples of ovarian abscesses underburrowing the broad ligament. The mistake is a serious one, as the treatment of the two conditions is entirely different (see p. 332). In either case the symptoms are inflammatory in type, and the

onset has usually been preceded by a septic labour or miscarriage. In making a diagnosis it should be remembered that the swelling of typical broad-ligament cellulitis extends down the side of the vagina as far as the point where that canal perforates the pelvic floor (see p. 29). The swelling due to an ovarian abscess does not reach below the lateral vaginal vault. It may also be remarked that whilst broad-ligament cellulitis is rare after miscarriage, especially when early, ovarian abscess is often so preceded.

An ovarian cyst may also underburrow the broad ligament (false broad-ligament cyst) until it comes to simulate a fibroid tumour primarily

FIG. 103.—SESSILE CYST GROWING IN THE LEFT BROAD LIGAMENT.

originating there. Many of these cysts are inflammatory, but some are malignant. Accurate diagnosis may be impossible, but an indurated, indefinitely bounded, and painless tumour lying to the side of the uterus in an elderly woman should always suggest malignant disease of the ovary.

Swellings to the Side of the Uterus originating in the Bowel. —Malignant growths of the cæcum and colon may lie lateral to the uterus, though more commonly they lie behind it. Their diagnosis has already been discussed (see p. 231). The indurated mass produced in some forms of chronic appendicitis may simulate disease of the right uterine tube, or a fibroid growing from the right side of the uterus (see p. 73).

Swellings to the Side of the Uterus originating in the Cellular Tissue of the Broad Ligament.—Of these the most important are the broad-ligament cyst, the broad-ligament fibroid, a hæmatoma of the broad ligament, and broad-ligament cellulitis.

The characters of a broad-ligament cyst have already been considered. Such a swelling is usually very tense, but quite painless, and its distinction from a broad-ligament fibroid may only be possible by collateral considerations (Fig. 103, see pp. 149 and 176).

A hæmatoma of the broad ligament is nearly always the result of intra-ligamentous rupture of a tubal gestation. The general features of such a case are those of the less fulminant type of that disaster which terminate in the production of a hæmatocele. The swelling, however, lies more or less directly to the side of the uterus instead of behind it (see p. 135).

Broad-ligament cellulitis is nearly always the result of infection after labour. The swelling extends down the side of the vagina, and tends to extend in front of it and the cervix. As it enlarges it appears as a swelling just above Poupart's ligament, markedly lateral and dull on percussion. When pus has formed, the swelling may fluctuate, bulge into the lateral vaginal wall and fornix, and can be felt to lie immediately under the mucous membrane (see p. 215).

The importance of diagnosing between this condition and an ovarian abscess that has underburrowed the broad ligament has already been alluded to (see p. 235).

Swellings to the Side of the Uterus originating from Rare Sources.—Boney tumours of the pelvic wall may simulate a growth originating in the uterus, uterine tube, or ovary. A mass of enlarged glands lying on the external iliac vessels or in the obturator fossa may be felt through the lateral vaginal vault. A ureteric calculus can sometimes be felt in the same way. All such swellings are very rare.

SWELLINGS IN FRONT OF THE UTERUS.

A swelling in front of the uterus may originate—
    From the uterus itself.
    From the uterine tubes.
    From the ovary.
    From the bladder.
    From the bowel.
    From the cellular tissue between the cervix and vagina and the bladder.

Swellings in Front of the Uterus originating in the Uterus.—A swelling felt through the anterior vaginal vault may be the body of the uterus (see p. 202).

Fibroids often spring from the anterior uterine wall and occupy the utero-vesical pouch. Similarly a uterine sarcoma may occupy that position, or carcinoma of the corpus, after perforating the uterine wall, may form a mass there.

A fibroid of the anterior uterine or cervical wall is by far the commonest tumour to find in the vesico-uterine pouch (Fig. 104).
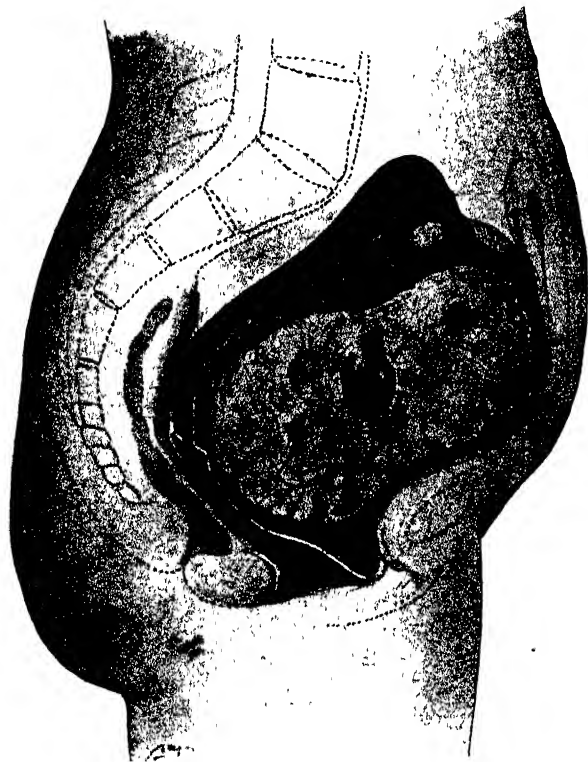
Fig. 104.—Anterior Cervical Myoma.

Swellings in Front of the Uterus originating in the Uterine Tubes.—On rare occasions a tubal swelling may lie in front of the uterus. When it does so, it is usually a hydrosalpinx that has undergone axial rotation. Accurate diagnosis is impossible.

Swellings in Front of the Uterus originating in the Ovary. —It is rare to find an ovarian tumour in front of the uterus unless that organ is markedly retroverted. Occasionally, however, an ovarian cyst may cross the top of the broad ligament with the uterus in normal position. Many of these tumours have undergone axial rotation. The

lower pole of large ovarian cysts may be felt through the anterior vaginal vault, the tumour having displaced the uterus backwards (see p. 202).

Swellings in Front of the Uterus originating in the Bladder. —The distended bladder forms a soft, indefinite tumour that may be palpated through the anterior vaginal vault. Malignant tumours of the posterior vesical wall may, after adhering to the front of the uterus, form a mass liable to be mistaken for a uterine fibroid.

A ureteric calculus low down may be felt as a very hard nodule in front of the upper part of the vagina.

Swellings in Front of the Uterus originating in the Bowel.— The tendency for malignant tumours of the intestines to gravitate downwards into the pelvis has already been commented upon. In this way a mass originating in the transverse or pelvic colons may come to lie in front of the uterus and behind the bladder, and simulate a tumour (probably a fibroid) growing from the former. Accurate diagnosis is impossible in such cases (see p. 231).

Swellings in Front of the Uterus originating in the Cellular Tissue there.—There is a variety of cellulitis known as " anterior " in which the tract of tissue lying between the cervix and vagina and the back and base of the bladder is swollen and indurated (see p. 202).

Anterior cellulitis has nearly always been preceded by labour, miscarriage, or some wound of the vaginal or cervical walls. It is usually associated with cellulitis of the broad ligament, and extends down to the anterior vaginal wall as far as the upper surface of the pelvic floor proper. It forms an indefinitely bounded, diffuse, and very tender swelling associated with marked vesical symptoms, and by its position and extent could not readily be mistaken for anything else.

SWELLINGS ALL ROUND THE UTERUS.

A swelling that surrounds the whole uterus is usually compound in nature ; thus it may consist of an inflammatory enlargement of an appendage or both appendages in conjunction with multiple uterine fibroids. Diffuse pelvic cellulitis affecting the entire pelvic cellular tissue produces a typical induration in which the uterus appears as though set in plaster of Paris. Bilateral salpingitis may coexist with this condition. Diffuse carcinomatous infiltration, usually secondary to carcinoma beginning in the cervix, gives a similar feeling to the touch. Finally, a central cervical fibroid uniformly expanding the cervix may appear as a swelling entirely surrounding the uterus.

ABNORMAL CONDITIONS OF THE CERVIX.

Having now dealt with the various abnormal conditions of the body of the uterus and the tumours that may be adjacent to it, we will next deal with abnormal conditions of the cervix.

The practitioner, on making a vaginal examination, may notice that—

The direction of the cervix is abnormal.
The cervix is absent.
The cervix is smaller than normal.
The cervix is larger than normal.
The shape of the cervix is abnormal.
The cervix is diseased.
The cervix is torn.
Some structure is coming through the cervix.
The consistence of the cervix is abnormal.
The colour of the cervix is abnormal.
The cervix is double.
The cervical canal is absent.

ABNORMAL DIRECTION OF THE CERVIX.

The position of the cervix varies with that of the body of the uterus. Thus when the uterus is in its normal position the cervix is looking downwards and backwards.

The more the body of the uterus inclines backwards with its long axis in its normal relation to the cervix the more will the cervix tilt forwards, so that from looking downwards and backwards it may look straight downwards or, with a marked retroversion, forwards and upwards.

If the tissue at the junction of the body of the uterus and the cervix is soft, then the body of the uterus may bend backwards, in which case the position of the cervix is less altered than if the uterus did not bend, and there is an acute angle between the posterior lip of the cervix and the body of the uterus in the pouch of Douglas.

In most cases not only is the body of the uterus inclined backwards (retroversion), but it is also bent backwards (retroflexion), in which case the cervix will be found pointing to a varying degree forwards, and there will in addition be the angle between it and the body of the uterus.

Thus from the position of the cervix it may be possible to diagnose that of the body of the uterus, although, as we have seen, a tumour in the pouch of Douglas can, by making an angle with the cervix, simulate a retroflexion (see p. 203).

THE CERVIX IS ABSENT.

The cervix may be absent from atrophy in old age or in superinvolution, so that the external os is flush with the vaginal roof. Such a condition is not in any way difficult to diagnose, the age of the patient being a sufficient indication of the cause.

The cervix may have sloughed away after injury or have been removed
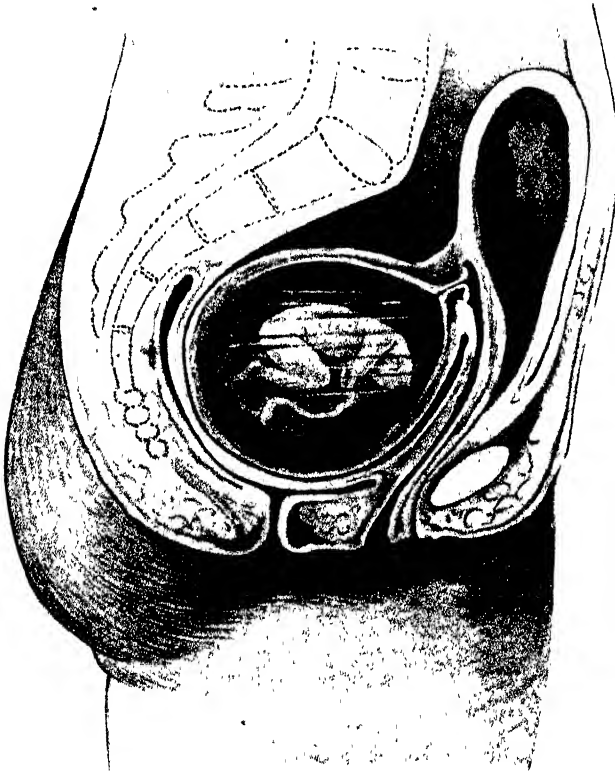
FIG. 105.—RETROVERTED GRAVID UTERUS.

by operation : the history in either case will satisfactorily account for its non-existence. Sloughing of the cervix leading to its disappearance is a very rare condition and results from serious injury during childbirth.

Lastly, the cervix may appear to be absent, that is, it cannot be felt by an ordinary vaginal examination, and more especially by one inexperienced in vaginal examination.

Such a condition will be found with an incarcerated retroverted

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gravid uterus or an incarcerated fibroid of the uterus associated with
retroversion.   In these the cervix is directed very far forwards and
upwards, so that in a marked case it is projecting up behind and
perhaps over the symphysis pubis.   When, therefore, an ordinary vaginal
examination is made, the cervix cannot be felt, and it is only by using
the left forefinger, if the patient is lying on her left side, and passing it
up along the posterior surface of the symphysis that the cervix is detected.

The cervix is apparently absent in some cases of cervical fibroid
when it is replaced by a large, hard, rounded tumour filling the pelvis

FIG. 106.—SENILE CERVIX.

FIG. 107.—"CONICAL" CERVIX WITH
"PIN-HOLE" OS.

above the vaginal roof.   In those cases, if a careful examination is made,
the external os can be felt flush with the swelling.

THE CERVIX IS SMALLER THAN NORMAL.

The atrophy due to age or an artificial menopause will make the cervix
smaller than normal (Fig. 106).   The first cause would be self-evident, in
the second case there would be a history of some operation involving the
removal of the ovaries.

The cervix may also be smaller than normal as the result of atrophy
accompanying superinvolution, in which case there would be a history of
permanent amenorrhœa, together with other symptoms and signs of the
menopause.

The cervix may have been partly destroyed or removed as the result
of injury or operation, and so reduced in size.

Lastly, the cervix may be congenitally small.   There may be other
evidences of maldevelopment, such as a conical shape, " pin-hole " os (Fig.
107), marked anteflexion of the uterus, absence of pubic hair, badly
developed breasts, hair on the upper lip, a masculine voice, and primary

amenorrhœa (see p. 45), although it is not necessary for each and every one of these signs to be present.

THE CERVIX IS LARGER THAN NORMAL.

The size of the cervix varies within certain limits which only experience will teach ; an enlargement over and above this is an indication of maldevelopment or disease.

MALDEVELOPMENT.—*Elongation of the Vaginal Cervix.*—Elongation of the vaginal cervix is frequently met with. The cervix is so lengthened that it may reach as far as the vulval opening or even project through it.

This elongation may affect either the vaginal portion of the cervix, that part below the reflection of the vaginal walls, or the supra-vaginal portion, that part above the reflection.

Elongation of the vaginal cervix is met with under two conditions : in virgins or nulliparæ, when the cervix, though much elongated, is at times narrower than normal ; and in parous women, apparently as the after-result of parturition, when the cervix, in addition to being elongated, is enlarged in all directions. In some of these latter cases the hypertrophy is evidently inflammatory, marked evidences of cervicitis being coexistent.

The patient may have consulted the practitioner for dysmenorrhœa, for discharge, or because of the inconvenience caused by the projecting cervix through the vulva. On the other hand, no complaint may be made until marriage, when the practitioner may be consulted for dyspareunia or sterility, or the elongated cervix may be discovered in the process of a routine examination for some other complaint.

The differential diagnosis between elongation of the vaginal cervix and those cases in which the appearance of the cervix at the vulva is secondary to inversion of the vagina have already been discussed on page 216.

DISEASE.—Enlargement of the cervix occurs in chronic cervicitis, especially when it has resulted in cystic degeneration of the cervical glands, or it may be due to a fibroid tumour or malignant disease.

. *Chronic Cervicitis.*—Inflammatory enlargement of the cervix is most often associated with an old laceration, the result of childbirth. Chronic cervicitis may lead on to cystic disease (see p. 245).

Cysts of the cervix, which are known as ovulæ Nabothi, may be present as small, shot-like protuberances, with the colour of boiled sago, due to a blocking of the mouth of the glands, and, when pricked, a secretion having the appearance and consistence of white of egg escapes. Occasionally, however, such a cyst may attain to the size of a golf-ball.

Fibroid of the Cervix.—Fibroids of the cervix may vary in size from

that of a small shot to one completely filling the pelvis like a fœtal head during labour.

The large fibroids that can be felt on abdominal examination we have already discussed (see p. 162), and now need only concern ourselves with the smaller ones.

A small fibroid of the cervix enlarges this structure and makes it harder. It may be projecting into the cervical canal, into the broad ligament when situated in the supra-vaginal portion of the cervix, or, if very small, it may remain in the tissues of the cervix without projecting in either direction.

The cervical canal may become somewhat dilated if the fibroid projects into it, and the tumour may, on a cursory examination, give the impression that it is a cancer, but the fact that it is not friable and does not bleed on pressure will settle the diagnosis.

Malignant Disease.—In malignant disease of the cervix this structure

FIG. 108.—VIRGIN CERVIX WITH SLIT-SHAPED OS.

FIG. 109.—NORMAL PAROUS CERVIX.

is at times markedly enlarged by the excessive growth of the tumour. When the disease attacks the vaginal aspect of the cervix the cause of the increase in size is easily identified, as there will be marked bleeding and discharge from an obvious ulcer or growth, but with the endo-cervical type of cancer, in which the disease commences in the mucous membrane lining the cervical canal or the glands, no other alteration, other than the increased size, may at first be noticed; such an enlargement, however, when associated with bleeding from the cervix, should excite great suspicion (see p. 247).

ABNORMAL SHAPE OF THE CERVIX.

The shape of the cervix is variable within normal limits. In the virgin it is obconical, and the external os is usually round, but it may be slit-shaped (Fig. 108). In parous women the cervix is larger, is more cylindrical in shape, and its lower extremity is much less pointed or

even expanded, while the external os is represented by a pronounced slit (Fig. 109).

The cervix is sometimes found to be markedly conical in shape, in which case there is generally a pin-hole os, and all grades from this to the normal shape may exist. The practitioner is likely to discover such an abnormal shape if consulted by a patient for sterility or dysmenorrhœa, as both these symptoms are often associated with it, the variety of dysmenorrhœa being of the virginal type (see p. 98). It is also true, however, that some of the most marked examples of conical cervix and pin-hole os are entirely free of these symptoms. The shape of the cervix may also be altered by tears (see p. 253).

Cases are sometimes met with in undoubted virgins in which the cervix feels very like that of a woman who has borne children. The os is open and round or broadly slit-shaped, suggesting an old laceration. Some of these patients have been sufferers for years from chronic cervicitis and leucorrhœa.

THE CERVIX IS DISEASED.

The following diseases of the cervix may be discovered: Chronic cervicitis with erosion, cystic degeneration, carcinoma, sarcoma, tubercle, and syphilis.

FIG. 110.—GRANULAR STAGE OF AN EROSION.

CHRONIC CERVICITIS.—Chronic cervicitis may follow septic labour, or may be due to infection by the gonococcus or by vaginal organisms not venereal in nature.

The patient will complain of a discharge which may be slight or profuse, according to the severity of the disease, and, if severe, the character of the normal cervical secretion may be changed to one of a semi-purulent nature (see p. 62).

On digital examination an erosion is present, or the cervix is lacerated and hypertrophied, or ovulæ Nabothi may be seen.

On passing a speculum a glairy secretion, or a muco-purulent one, according to the severity of the disease, may be seen escaping from the external os in the neighbourhood of which an erosion is generally present.

EROSION.—An erosion of the cervix, as it is erroneously called, is a

patch of gland-forming, sub-columnar epithelium, situated on the vaginal portion of the cervix, where under natural circumstances stratified epithelium is to be found.

FIG. 111.—VILLOUS STAGE OF AN EROSION.

This change in the epithelium is due to chronic infection, and an erosion is, therefore, an expression of chronic cervicitis.

To the touch, an erosion is at first soft and granular, and, later on, velvety and villous. In the granular stage (Fig. 110) the edge is slightly depressed, and in the velvety stage (Fig. 111) it is very slightly raised, but the marked edge that obtains in carcinoma is absent. On examination a bright red patch, which has a rough appearance, can be seen in the neighbourhood of the external os. If an erosion is stroked, it may bleed, generally a very little, at times rather much, but it is noticed that the area occupied by the erosion is firm and does not break down.

After an erosion has existed a long time, it passes into the follicular stage, the surface becoming whitish from thickening of the epithelium, and presenting a number of little bluish elevations due to retention cysts (ovulæ Nabothi) (Fig. 112).

An erosion may be mistaken for malignant disease of the cervix.

An erosion may often be found in single women and in women much younger than the average age for carcinoma, although this variety of malignant disease of the cervix occurs now and again in women under 30, and we have seen it in a girl of 18.

FIG. 112.—FOLLICULAR STAGE OF AN EROSION.

An erosion is firm, its edges are not sharply defined to the touch, it is

not friable, and there may be two patches separated by a healthy interval of cervical epithelium.

A difficulty sometimes arises when an erosion is associated with a lacerated cervix. The indurated tissue, due to the chronic inflammation, and the " mushroom " shape of the cervix, due to the laceration, may very fairly simulate malignant disease. Indurated tissue, merely the result of inflammation, differs, however, from that due to infiltration by new growth, in that it is tough, resistant, and not friable.

As a rule an erosion does not bleed when it is touched, even with considerable force, but, occasionally, quite marked bleeding may occur, and in such cases it may be necessary to complete the diagnosis by removing a portion of the affected tissue for microscopical examination, which, after all, is the safest method of diagnosis in all cases, and should always be made when there is the least doubt. If the practitioner removes the specimen himself, he should be particularly careful to remove a portion near the edge, so that some healthy epithelium may be removed also for purposes of comparison, and he should also cut sufficiently deep to include some of the muscular tissue of the cervix.

CYSTS OF THE CERVIX.—Cysts of the cervix when small are known as ovulæ Nabothi, and present as small, smooth, hemispherical nodules which, on being pricked, exude a mucous secretion. Occasionally a large solitary cyst may be found giving the appearance of a fibroid of the cervix, but which fluctuates.

CARCINOMA OF THE CERVIX.—Carcinoma of the cervix may commence in the stratified epithelium covering the vaginal portion of the cervix, or in the columnar epithelium lining the cervical canal or that of the glands of the cervix.

Ecto-cervical Carcinoma.—Carcinoma in this situation commences as a hard, nodular elevation, with edges passing abruptly into the normal cervix, its surface is slightly rough, and its colour is darker than that of the rest of the cervix. It may also commence as a shallow ulcer or as a diffuse erosion-like growth. This growth either breaks down, forming a deep excavation, with firm irregular undermined edges (Fig. 113), or gives rise to a protuberant mass projecting into the vagina, which has been compared in shape to a cauliflower or mushroom (Fig. 114). From the earliest time the tissue forming the cancer is very friable, and bleeds and breaks down on the least pressure.

It is in the early stages only that any doubt is likely to be felt as to the nature of the growth, and the history in many cases will be a useful guide.

The patient, who will generally be between 35 and 50 years of age, will consult the practitioner for hæmorrhage, occurring after coition, douching, or exertion, and as the hæmorrhage may at first be slight, she may be careless, and delay seeking advice.

It is important to remember that carcinoma of the cervix is commonly grafted on an erosion, and the change from non-malignancy to malignancy may be very gradual.

Endo-cervical Carcinoma.—Carcinoma commencing in the mucous

FIG. 113.—ULCERATING FORM OF CARCINOMA OF THE CERVIX.

FIG. 114.—FUNGATING FORM OF CARCINOMA OF THE CERVIX.

membrane, lining the cervical canal, especially high up in the neighbour hood of the internal os, may at first escape diagnosis, unless the practitioner is on his guard.

FIG. 115.—HYPERTROPHIC INFILTRATING FORM OF CARCINOMA OF THE CERVIX.

FIG. 116.—SENILE FORM OF CARCINOMA OF THE CERVIX.

As regards the history, it will be similar to that of ecto-cervical carcinoma, the patient will be, as a rule, between 35 and 50 years of age ; she will be almost certain to have had one or more children, and she will complain of irregular bleeding, which may for some time have been

attributed in ignorance to the approaching menopause, more especially as the patient has been perhaps examined, and nothing abnormal detected about the cervix.

In the early stage a vaginal examination may fail to disclose anything of a definite nature on which to found a diagnosis. As the disease advances it will be noticed that the cervix is much enlarged and that its tissue is abnormally hard, though the speculum shows no ulceration
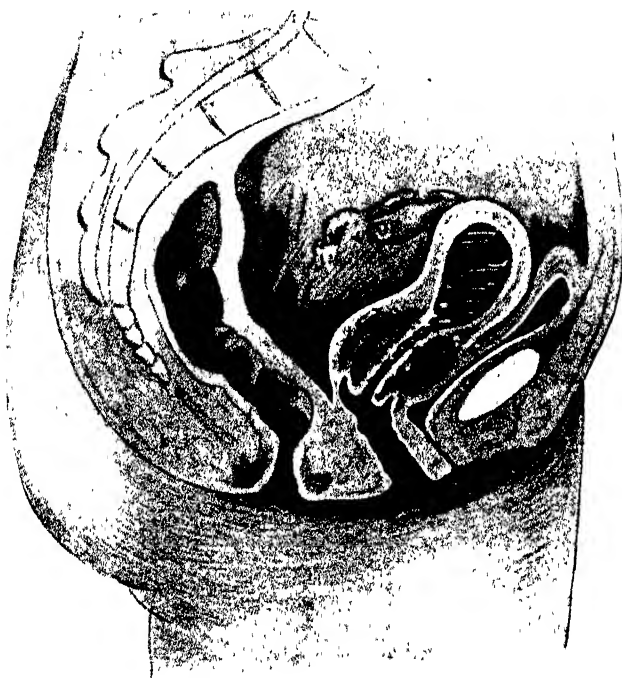
Fig. 117.—Endo-cervical Carcinoma. On examination a massive enlargement of the Cervix will be detected. (See also Fig. 72.)

(Fig. 115). Carcinoma of this type spreads outwards more quickly than downwards, so that a rectal examination may detect the growth spreading outwards into the broad ligaments, and when eventually it does appear at the external os, it may do so as a sloughing mass, which may be mistaken for a necrotic polypus.

There is another type of endo-cervical carcinoma which it is equally important for the practitioner to appreciate, namely, that in which the growth begins in the supra-vaginal cervix of an aged woman. In such, the vaginal cervix has disappeared by atrophy, and its place is taken

by a little depression in the vaginal vault. From this depression blood escapes, and the examining finger may detect an indefinite hardness about it (Fig. 116)

Massive enlargement of the cervix without ulceration, but accompanied by free bleeding from the external os, should always excite suspicion (Fig. 117).

If the well-recognized rule is followed that the causes of irregular bleeding in a woman, married or single, should be at once investigated, even if it is necessary to dilate the cervix to do so, the disease will be diagnosed by the friability of the tissue and its abnormal liability to bleed. In advanced cases the patient will complain of an offensive discharge and pain.

SARCOMA OF THE CERVIX.—Sarcoma of the cervix may occur in children. It is a very rare condition, and is associated with severe bleeding. On examination the tumour has the appearance of a bunch of grapes.

Sarcoma may also occur at the same ages as carcinoma of the cervix, in which case it gives rises to similar symptoms. In appearance it may so closely resemble a large nodular carcinoma or a breaking-down fibroid that a microscopical examination is necessary to complete the diagnosis.

TUBERCLE OF THE CERVIX.—Tuberculous disease of the cervix may be indistinguishable from cancer in this situation until a microscopical examination has been made. It is rarely primary, evidence of tubercle being usually found in other parts of the body, and especially in the tubes.

With regard to the history, the average age is lower than that of carcinoma, and the association of parity is not nearly so well marked.

The first symptom complained of is generally that of a muco-purulent secretion, and it is only somewhat later that hæmorrhage appears, a reversal of what generally happens with cancer.

The disease commences with miliary tubercles, which are gradually replaced by an ulcer. It is of a very chronic nature, and the length of the history and extent of the ulceration may have an important bearing on the diagnosis.

On palpation, the tissue involved is not nearly so friable, so that bleeding on its being touched or after exertion is not common.

The lesion does not extend in the same way. Ulceration proceeds slowly in its immediate neighbourhood, and the surrounding tissues are not involved, neither, as a rule, does the ulceration extend upwards into the uterus.

Apart, however, from the age, parity, and length of illness, it may be very difficult or impossible to come to a definite conclusion without making a microscopical examination.

SYPHILIS.—A chancre on the cervix is extremely rare, and in most cases is single, though occasionally it may be double, in which case there would be no difficulty in diagnosing it from cancer.

The history of the case may give some aid in diagnosis. The lesion will probably be accidentally discovered.

It forms a greyish, flattened elevation which bleeds, but not easily, on being touched, and the tissue is not friable.

General glandular enlargement may be present with other signs of constitutional syphilis.

The disease will improve rapidly under treatment, and a Wassermann test can be made if necessary.

SOME STRUCTURE IS PROJECTING THROUGH THE CERVIX.

POLYPI OF THE CERVIX.—Cervical polypi are of two main varieties, fibroid and mucous (Figs. 118 and 119).

Mucous polypi of the cervix, as a rule, do not grow to any great size. A large mucous polypus should excite suspicion of malignancy, and should be examined microscopically—in fact, this should be the routine practice. A fibroid polypus is often nodular, and may attain a large size.

With a mucous polypus the patient will complain of prolonged and irregular but slight bleeding. Occasionally the bleeding of a mucous polypus of the cervix is very severe ; in one case, in which we removed such a growth, the patient had nearly bled to death, and had to be transfused, and even then her life hung in the balance for some hours. A fibroid polypus growing from the cervix, as a rule, unless it is associated with fibroids in the body of the uterus, does not give rise to hæmorrhage, nor does a corporeal fibroid polyp, after it has been expelled from the uterus, unless ulceration of its surface or sloughing occurs.

A mucous polypus will always be associated with a watery or mucous discharge, a fibroid polypus not necessarily, but a foul discharge will be present if the tumour has sloughed or is ulcerated.

The polypus will be felt to be movable and hard or soft, according to whether it is fibroid or mucous in nature. If more than one is felt, then the polypi will be mucous in structure. As a rule, a mucous polypus is smaller than a fibroid polypus, and bleeds on being touched. The pedicle of a fibroid polypus is usually much more distinct than is the case with a mucous polypus. Mucous polypi of the cervix are frequently associated with mucous polypi of the body, and the patient may then complain of menorrhagia. As fibroids of the uterus are frequently multiple, the discovery of a fibroid polypus should lead the practitioner

further to examine the patient for corporeal fibroids if he has not already done so.

The surface of a mucous polypus is pinker than the rest of the cervix, whereas a fibroid polypus, unless it is ulcerated, is paler. Occasionally a mucous polypus may undergo cystic degeneration when it becomes much enlarged and bossy in contour and has more or less a translucent appearance (Fig. 120).

POLYPOID SARCOMA.—In this condition the sarcoma projecting through the external os gives the appearance of a fibroid polypus. It is,

FIG. 118.—FIBROID POLYP OF THE CERVIX.

FIG. 119.—MUCOUS POLYP OF THE CERVIX.

however, somewhat friable, bleeds fairly easily, and is darker in colour than the fibroid variety.

Tumours of this nature have usually been mistaken for fibroids until their reappearance after removal aroused suspicion.

CONCEPTION PRODUCTS.—The whole ovum, the foetus, or part of the placenta may be found protruding through the external os. The history of the case is usually sufficient to warrant a correct diagnosis. Occasionally when the fact of pregnancy is not disclosed or is overlooked, the mass, especially if necrotic and offensive, may be mistaken for a sloughing new growth.

EXTRUSION OF A FIBROID.—A sessile submucous fibroid may present at the external os as a hard tumour, and give rise to a mistaken diagnosis

of a fibroid polypus. Further dilatation of the cervix will be necessary to prove its nature (Fig. 121).

A sloughing fibroid may be mistaken for the products of gestation. In some of these cases complete necrosis of the tumour has occurred which presents as a pultaceous mass at the external os (see p. 184).

CARCINOMA OF THE BODY. —Carcinoma of the body of the uterus may take the form of a fungating mass so large as to protrude through the cervix. Such patients are always elderly, and the diag-
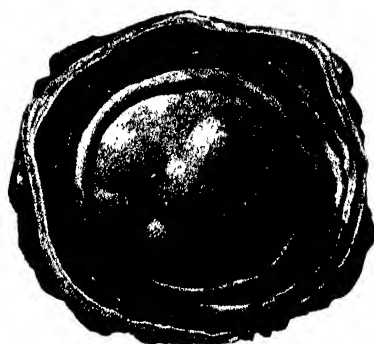
FIG. 120.—CYSTIC POLYP OF THE CERVIX.   FIG. 121.—MYOMA EXTRUDING THROUGH THE EXTERNAL OS.

nosis lies between malignant disease and a sloughing fibroid. The latter condition is never so friable.

PARTIAL INVERSION OF THE UTERUS.—For a description of this condition see page 288.

THE CERVIX IS TORN.

The cervix may be lacerated in one or more places as the result of childbirth or instrumental dilatation. Most commonly it is lacerated on the left side (Fig. 122), then on both sides (Fig. 123), and least often there may be three or more lacerations present (Fig. 124). The laceration usually includes the muscle, but may only extend through the mucous membrane.

When the laceration is bilateral a well-recognized deformity of the cervix results. As a certain amount of chronic inflammation in the

cervical canal not infrequently follows a laceration, the cervix often feels harder than usual and is hypertrophied, and the mucous membrane

FIG 122 —PAROUS CERVIX WITH ONE-SIDED LACERATION

FIG 123 —BILATERAL LACERATION OF PAROUS CERVIX.

lining the cervical canal becomes everted and the seat of an erosion either on one or both sides (Figs. 125, 126). In some cases one lip of the cervix may be more hypertrophied than the other. The enlarged lips may feel extremely hard and be distorted in shape, so that they may be mistaken for a tumour. The cervix may become cystic, and the mucous membrane on the inner surface of the lips assumes the appearance of an erosion. Such a condition may be mistaken for a large erosion without laceration, and the point can be settled by bringing the two everted lips of the cervix together by means of a tenaculum, when it will be found to resume
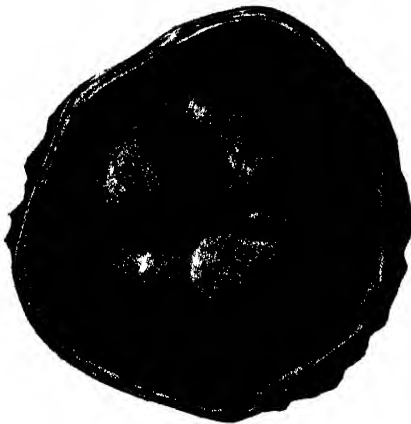
FIG. 124.—TRIRADIATE LACERATION OF PAROUS CERVIX.

more or less its normal shape and the erosion will disappear from view.

THE CERVIX IS OF ABNORMAL CONSISTENCE.

If on digital examination the cervix is soft the practitioner should at once suspect pregnancy. There is no condition other than pregnancy in which so much softening occurs.

In extra-uterine gestation the cervix is somewhat softened, as it also is in the earlier stages of cervicitis.

The cervix or portions of it become hard when the seat of malignant disease; this is especially noticeable in endo-cervical carcinoma. A fibroid tumour also that is situated in the cervix will also increase its
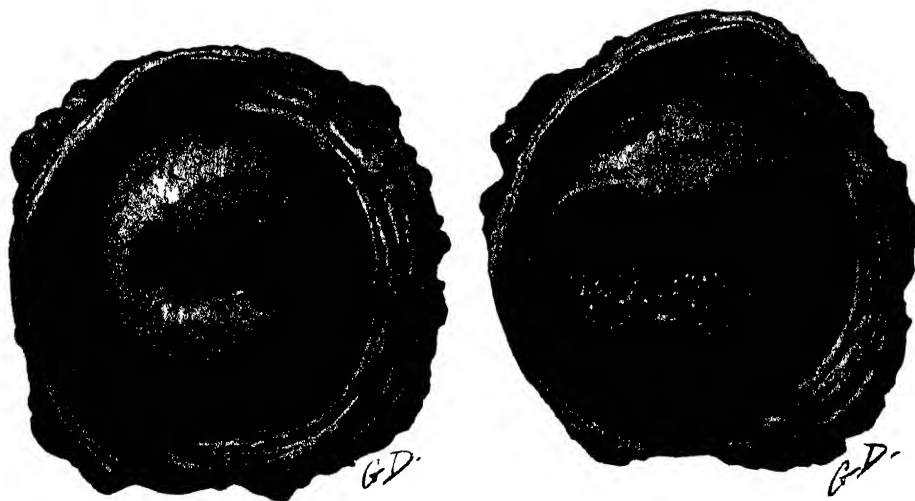
FIG. 125.—UNILATERAL SPLIT OF THE CERVIX, WITH EROSION.

FIG 126 —BILATERAL SPLIT OF THE CERVIX, WITH EROSION.

consistence as will chronic inflammation, especially when associated with laceration.

THE COLOUR OF THE CERVIX IS ABNORMAL.

The cervix should be pink in colour. In a pregnant woman after the second month it assumes a purple hue due to the congestion, and this colour will also appear, although not so marked, as the result of any other cause of congestion such as extra-uterine gestation or fibroid tumour.

The area of an erosion is a bright red, that of malignant disease is more dusky, yellowish, or mottled. Ovulæ Nabothi cause certain areas of the cervix to have the opalescent sheen of boiled sago.

THE CERVIX IS DOUBLE.

This malformation is very rare, but when it does occur is easily detected both by palpation and with the speculum. It is most often associated with a double vagina.

THE CERVICAL CANAL IS ABSENT.

The cervical canal may be obliterated through disease or be absent congenitally.

Congenital absence of the cervical canal is a rare malformation. The history of such a case is as follows :—A mother brings her daughter to the practitioner because, although past the age of puberty, menstruation has never occurred, or because the daughter is complaining of pain and a swelling in the abdomen, due to the retention of menstrual blood in the uterus.

As a rule, however, the uterus or ovaries, or both, are poorly developed in these cases and menstruation is absent, so that the only complaint will be that of amenorrhœa.

The cervical canal may be obliterated as a result of inflammation due to infection of tears resulting from childbirth, to operations for the repair of a lacerated cervix, or following the application of strong chemicals. In these cases, if the patient is not past the climacteric, retention of menstrual blood in the uterus necessarily follows with very severe monthly pain.

ABNORMAL CONDITIONS OF THE VAGINA.

The practitioner when examining the vagina may discover that—
　　The vagina is absent or deformed.
　　The vagina is inflamed.
　　The vagina is ulcerated.
　　The vagina is injured.
　　The vagina is the seat of a swelling.

THE VAGINA IS ABSENT OR DEFORMED.

The vagina is formed by the coalescence of the two tubes known as the ducts of Müller. These tubes were in the first place solid columns of cells. The failure of these solid columns to become canalized in any part of their length or of the tubes to coalesce will account for the various abnormalities met with.

Thus if the tubes remain solid there is no vagina. If the canalization stops at any point, then the vagina above or below this will be absent according to where the canalization began or ended. This will account

for the absence of any portion of the vagina ; as a rule it is the lower third that remains solid, particularly at its extreme end, where it meets the urogenital sinus, when a thin septum remains blocking the entrance to the vagina, the so-called " imperforate hymen " (see p. 270).

Similar transverse septa may be found at any other part of the canal, most frequently perforated like a diaphragm with a hole.

Again, if the ducts of Müller fail to coalesce a double vagina results, or if the fusion fails to take place the whole way down, a longitudinal septum affecting only a certain portion of the canal results.

If the uterus is double, the vaginæ are generally patent with a cervix projecting into each, although the lower end of one vagina may be closed by a transverse septum with a resulting hæmatocolpos (see p. 265). If the uterus be single, the vagina that does not lead up to it may likewise be closed, and later form a cyst.

Transverse perforated septa can easily be recognized on palpation ; the only error likely to be made is that of mistaking the septum for the roof of the vagina and the perforation for the external os, the absence of the cervix being attributed to atrophy or maldevelopment. We have known such a mistake to be made, but it will be easily avoided if the normal length of the vagina be remembered.

Unless the transverse septa are complete they are, as a rule, only discovered on a complaint of dyspareunia being made, during an examination for some other condition or at childbirth, when they may form an obstruction.

The longitudinal septa are discovered in a similar manner.

If the transverse septum is complete and the uterus is functional a train of symptoms and signs which are very distinct will arise (see p. 270).

The absence of the vagina will be discovered if, the periods not appearing, examination fails to discover any vaginal orifice, nor any swelling bulging in this situation.

Occasionally a greatly distended condition of the vagina is met with, the canal being " ballooned " and its walls tense and smooth. No symptoms are associated with this condition except at times the curious complaint that the patient feels wind escape from the passage. Ballooning of the vagina probably depends upon some peculiarity of the intra-abdominal pressure (Fig. 127).

The vagina naturally atrophies with age, so that after the menopause, especially in single women, its size rapidly decreases until, at times, it is difficult to insert a finger.

Atrophy of a similar nature may also take place after the artificial menopause induced by operation.

The conditions of senile vaginitis (see p. 259) and kraurosis (see p. 275) are not uncommonly associated with atrophy of the vagina.

17

THE VAGINA IS INFLAMED.

The Bacteriology of Vaginitis.—In every case of vaginitis the causative organism should be sought. It is important to remember that in a gonorrhœal infection the gonococcus may soon disappear from the vagina, though it may linger for a long time in the cervix and urethra, and its place be taken by secondary infecting organisms, especially bacilli of the diphtheroid group.

The detection of the gonococcus requires the service of a skilled bacteriologist, and the practitioner will be wise to avail himself of such services, and the more so because legal proceedings may easily arise out of such cases.

A most troublesome form of vaginitis is that due to streptococcal infection. The source of the organism is not always apparent, but it certainly may be conveyed by a gleet due to stricture or prostatitis. Streptococcal vaginitis is often associated with streptococcal cystitis.

Pneumococcal vaginitis is known, and is most often the result of infection following a miscarriage of labour.

In the milder forms of vaginitis, staphylococcus albus and bacillus coli are usually found singly or conjointly. As already mentioned, a persistent and troublesome form may be set up by diphtheroid bacilli.

With regard to the cause, the history may be of some help. Gonococcal infection is the commonest cause in unmarried women. Streptococcic vaginitis may be the result of a septic puerperium. The age of the patient may assist in the diagnosis, for vaginitis in a young
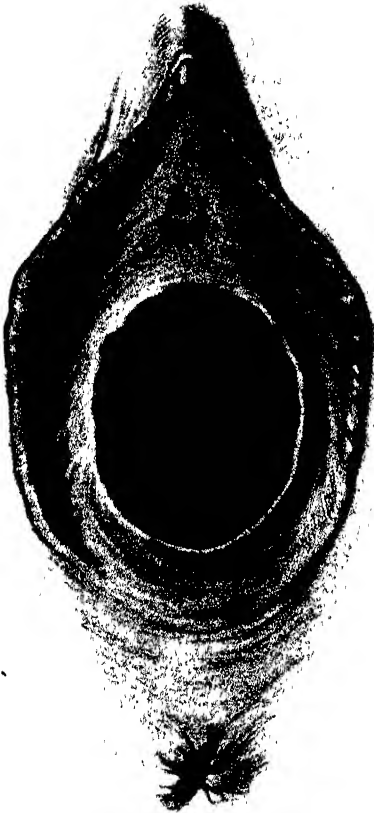
FIG 127.—"BALLOONED" VAGINA.

child is much more likely to be gonorrhœal in origin than it is in an adult.

The presence of a pessary which has not been removed for months is another common cause, while foul discharges originating in the cervix or higher up, may secondarily infect the passage.

The cervical infection, which invariably accompanies vaginal infection, is by far the most serious complication of vaginitis, especially in cases of gonorrhœa ; because the tortuous cervical glands afford a safe harbourage to the organisms, from whence they continually reinfect the vagina below, and from which they are only with great difficulty expelled.

As a result of severe vaginitis the walls become adherent ; this may escape notice in young children and may only be discovered later.

ACUTE VAGINITIS.—In acute vaginitis the patient complains of a profuse discharge accompanied with pain of a burning character in the vagina as well as of pelvic aching. Painful micturition and defæcation may be present also. On digital examination the vagina is tender and its temperature somewhat raised (see p. 65).

CHRONIC VAGINITIS.—If the inflammation is chronic, the patient will complain of discharge with soreness and tenderness of the passage and often excoriation of the external parts.

On separating the labia and distending the vagina with a suitable speculum the vaginal wall is found to be redder than usual, and this increased coloration may be distributed in patches which on palpation may bleed a little.

A purulent discharge, which is occasionally blood-stained and offensive, can be seen flowing from the walls. The cause may also be detected, such as a retained pessary, sloughing fibroid, or cancer of the cervix.

SENILE VAGINITIS.—In women at or past the menopause a variety termed " senile vaginitis " is common. In these cases the discharge is often profuse, watery, and stained with blood, whilst an inspection of the vagina discloses marked areas of redness, and if advanced small patches of ulceration, which on healing may lead to contraction of the vagina, or, becoming adherent to each other, form adhesions.

GRANULAR VAGINITIS.—Granular vaginitis is nearly always the late result of a gonorrhœal infection and gives rise to a profuse yellow discharge. The surface of the vagina is found to be covered with small papules, so that it feels and looks distinctly rough.

EMPHYSEMATOUS VAGINITIS.—Emphysematous vaginitis is associated with pregnancy and the puerperium. Small hard papules are found purplish in colour, which become pustular and then fill with gas, forming shot-like structures under the mucous membrane. If the vagina is filled with water and these structures are pricked the gas escapes.

INFLAMMATORY CASTS OF THE VAGINA.—The vagina sometimes sheds its mucous membrane as a cast. This rare complication has followed the application to the vaginal walls of stronger chemicals than should be used, and has also occurred during an attack of one of the acute specific fevers, more particularly typhoid. A few cases have been reported in which many casts were expelled although the patient appeared to be well. In a case that came under our notice the entire vaginal mucous membrane sloughed out as the result of sepsis set up by a foul pessary.

THE VAGINA IS INJURED.

The practitioner may be called upon to treat injuries of the vagina produced by childbirth, attempts at abortion, operation, or coitus. The vagina may also be injured by ulceration due to carcinoma, tubercle, syphilis, or a neglected pessary.

VESICO-VAGINAL FISTULA.—The commonest cause of a vesico-vaginal fistula is sloughing of the tissues from pressure of the fœtal head during a difficult labour, or laceration by the forceps during the extraction of the child. In the first case the fistula does not declare itself for some five or six days after the birth of the child, but in the second it allows urine to escape at once.

The practitioner may find that the fistula is due to a neglected pessary, part of which may be projecting into the bladder. If the fistula is due to ulceration from carcinoma, a hole will be found in the centre of the ulcerated neoplasm.

A fistula may follow the performance of hysterectomy or some plastic operation on the vagina.

The patient complains of a constant dribbling of urine, with perhaps great irritation and soreness of the vulva from the continual contact of that secretion. The urine will be seen to escape with an intermittent flow corresponding to the method of its escape from the ureter.

Fistulæ vary in size and position. The hole may be large enough to pass a finger through, or so small that its presence can only with difficulty be identified by a probe. In the latter case it is a good plan to run into the bladder some sterilized boric acid solution coloured with methylene-blue, when, if there is a vesico-vaginal fistula, the fluid will be seen to escape through it into the vagina.

If the hole can be easily identified, its edges will be found to be hard from cicatricial tissue, while projecting through it may be seen the dark red congested mucous membrane of the bladder.

URETERO-VAGINAL FISTULA.—A fistula may be due to the implantation of a cut ureter into the vaginal vault after hysterectomy. There

may be some difficulty in identifying its orifice, since the tissue in its neighbourhood will have cicatrized. If methylene-blue solution is injected into the bladder, the fluid will not escape into the vaginal canal, which, on the other hand, will be kept perpetually moist with urine. In such a case cystoscopic examination should be made to settle the diagnosis and to ascertain which ureter is leaking.

CONSTANT DRIBBLING OF URINE IN THE ABSENCE OF A FISTULA.—If the practitioner is consulted by the patient for a constant dribbling of water, he must remember that an important cause is an over-full bladder, the " incontinence of retention," as it is called. The abdomen should be palpated and a catheter passed.

As most patients are apt to magnify their symptoms rather than minimize them, a complaint of constant dribbling may be made when the real condition is that of increased frequency, so that the causes of this have to be excluded (see p. 126). Inability to control the flow of urine is also met with as a result of a weak sphincter (see p. 127).

RECTO-VAGINAL FISTULA.—If a recto-vaginal fistula is present, the patient will be quite unable to control the passage of flatus or the evacuation of the motions, this being especially noticeable when the bowels are relaxed.

Such fistulæ are usually the result of laceration during childbirth, but may be due to an abscess of the recto-vaginal septum which has burst both ways or to a breaking-down carcinoma.

As in the case of a vesico-vaginal fistula, the hole may vary in size. Its detection may be difficult, or a finger can easily be passed into it from the rectum.

RUPTURED PERINEUM.—Injury to the perineal body during childbirth varies both in its extent and direction. Thus the rupture may be concealed or revealed, and if the latter it may be complete or incomplete.

Concealed Rupture.—This is a very common form of rupture. The skin covering the base of the perineal body remains intact, but the tissues deep to it are more or less lacerated, the tear starting in the posterior vaginal wall covering the anterior surface of the perineum. Such a rupture is very likely to escape detection at the time of its occurrence unless particularly looked for.

Later the patient may consult the practitioner for symptcus of prolapse, and on inspection the perineum may have the appearance of being intact. When, however, a finger is passed into the vagina it can be carried back to the rectum, the perineal body having disappeared, leaving a thin stratum of skin between the vulval orifice and the anus.

Revealed Incomplete Rupture.—All degrees of this condition may be found, from the slight inevitable tear of the posterior fourchette which

occurs in most primigravidæ to a tear reaching from the vagina to the anus. There is no difficulty in detecting this injury—the vaginal orifice is gaping, and part or all of the base of the perineal body has disappeared, its place being taken by scar tissue. In addition. the anterior or posterior vaginal wall or both may be seen protruding (Fig. 128).

FIG. 128 —INCOMPLETE RUPTURE OF THE PERINEUM

FIG. 129. — COMPLETE RUPTURE OF THE PERINEUM.

Revealed Complete Rupture.—In these cases the tear has extended back through the sphincter ani into the rectum. The vagina is gaping, as also is the anus, and a portion of the mucous membrane of the rectum may be seen prolapsing as a scarlet-coloured pile. At times the tear misses the anal orifice and opens into the rectum just above it.

The patient may complain of complete incontinence of fæces at all times or only when the bowels are relaxed, and she will also be unable to control the escape of flatus (Fig. 129).

THE VAGINA IS ULCERATED.

The practitioner on passing his finger into the vagina may find that it is ulcerated. Such ulceration may be due to an ill-fitting or neglected pessary, infection of the wounds due to childbirth, cancer, friction following " prolapse," and very rarely to tubercle or syphilis.

The discovery of a pessary, the history of a recent labour, the presence of tubercle elsewhere, or the history of infection by the spirochæta pallida, or other signs of syphilis, may give assistance to the diagnosis.

CANCER.—Primary carcinoma of the vagina is a rare condition. When present it is generally found in women over 50 years of age and on the posterior vaginal wall.

The patient complains of a very offensive watery discharge, some bleeding, perhaps pain on defæcation, and rarely dyspareunia. On examination an ulcer is found with hard edges, while the subjacent tissue quickly becomes involved and adherent, so that the ulcer becomes more or less fixed.

If the growth is limited to the vagina, the iliac glands are those that first enlarge. According to its position the ulcer may extend into the rectum or bladder.

Carcinoma of the vagina secondary to carcinoma of the body of the uterus, the cervix, or the rectum is not at all uncommon. Most often it is secondary to disease of the cervix, spreading down on to the anterior or posterior vaginal wall, as the case may be.

The symptoms will be merged in the primary growth, and need not further here detain us.

Carcinoma may be recurrent in the vagina, most often in the upper end after removal of the uterus for that disease. Marked induration is felt, and the examining finger is blood-stained. Sarcoma of the vagina is very rare. It may assume an ulcerating form.

· Very rarely, as in a case reported by one of us, chorio-carcinoma may be primary in the vaginal wall. More commonly it is secondary to disease in the uterus (see pp. 193 and 267).

FRICTION.—Ulcers due to the friction of a pessary, or a procidentia, frequently simulate malignancy and sometimes become malignant, and if the tissue in the region of such ulcers is found to be distinctly indurated and to bleed easily it should be microscopically investigated.

TUBERCLE.—Tuberculous ulceration of the vagina is generally secondary to tubercle elsewhere, and the uterus is nearly always involved,

but primary disease has been reported. The appearance of the ulcer mimics malignant disease, and can only be distinguished from it by the microscope.

SYPHILIS.—Syphilitic ulceration of the vagina is extremely rare. When secondary it may be phagedænic in type, and lead to great deformity or total obliteration of the canal. A primary chancre in this situation is most uncommon.

THE VAGINA IS THE SEAT OF A SWELLING.

On passing the index finger into the vagina the practitioner may feel a swelling, or on separating the labia he may notice one projecting through the vaginal orifice.

These swellings may be divided into those projecting into the vagina from the cervix or uterus, and those attached to or belonging to the vagina itself. As the former have already been discussed (see p. 251) we need only now deal with the latter.

VAGINAL CYSTS.—Vaginal cysts are, as a rule, accidentally discovered during an examination for some other reason. They may, however, cause discomfort if sufficiently large to project through the vaginal orifice, or retention of urine if the pressure on the urethra is great. Dyspareunia, and at times obstruction to childbirth, may also result.

Rarely they become inflamed, when the patient will complain of much pain.

The origin of cysts of the vagina is in many cases rather doubtful. Implantation cysts have been known to follow injury during labour or operation, when a portion of the epithelium has become embedded. Occasionally a cyst follows a hæmatoma of the vagina Small cysts are at times found, on microscopical examination, to be due to dilated lymph vessels, and very rarely indeed a hydatid cyst may be identified from the nature of its contents, and is perhaps connected with a cyst of a similar nature in the broad ligament. Cystic formation may rarely occur in an aberrant gland in the vaginal wall.

Most vaginal cysts are found on the anterior wall of the vagina. This situation is so constant that there must be some reason for it, the most likely being that it is due to the persistence of Gartner's duct. Gartner's duct, which commences near the ovary, can be traced in the fœtus as an open tube down the side of the body of the uterus, then into its substance, through the cervix, on to the anterior vaginal wall. In the vast majority of cases it becomes occluded at birth. In certain animals, such as pigs and cows, the duct remains patent, and cysts on the anterior vaginal wall are found due to its local dilatation.

A very few cases have been reported in the human female in which

a cyst in the broad ligament has been found to be in direct relationship with a cyst in the anterior vaginal wall, and sepsis following an operation on the latter has spread to the former.

Gartnerian cysts are usually sessile, but may become almost polypoid. The mucous membrane covering them is atrophied, and their contents are in appearance and consistence like water (Fig. 130). Though usually single they may be multiple, and vary in size, being as a rule equal to that of a pigeon's egg, or a little larger. Very large cysts entirely filling and distending the vagina are rare.

On inspection the mucous membrane covering the cyst is found to be paler than the rest, and if the cyst is projecting through the vaginal orifice it may be translucent.

CYSTOCELE — RECTOCELE — A vaginal cyst on the anterior wall has to be diagnosed from a cystocele, and one on the posterior wall from a rectocele.

In either case the diagnosis is very easy, as quite apart from the normal or thickened appearance of the mucous membrane covering the cystocele or rectocele, a sound passed into the bladder or a finger into the rectum projects respectively into the cystocele or rectocele, whereas a cyst cannot be so entered.

A vaginal cyst may at times coexist with a cystocele or rectocele.

FIG 130 —CYSTS OF ANTERIOR VAGINAL WALL.

UNILATERAL HÆMATOCOLPOS. — The condition known as unilateral hæmatocolpos may also cause some difficulty in diagnosis.

It is due to one-half of a double vagina failing to canalize throughout its entire length, so that there is a septum at its lower end.

If this closed vagina is in relation with one-half of a double uterus, the menstrual blood will collect, forming a blood cyst or hæmatocolpos. A cystic swelling will then be found projecting into the patient's vagina, and is apt to be diagnosed as a vaginal cyst, unless a double uterus has been identified by bimanual palpation.

DILATED SKENE'S TUBULES.—Vaginal cysts must also be distinguished from small cysts that at times may be found just posterior to the orifice of the urethra and due to a dilatation of Skene's tubules.

VAGINAL HERNIA.—Very rarely a swelling of the vagina, due to a hernia of the intestine slipping down between the rectum and the uterus or the uterus and the bladder, may be detected just at the anterior extremity of the perineum and posterior end of the labium majus, or in front of the cervix. The swelling can be reduced quite easily, and with a gurgle slips back when the patient lies down.

It must be differentiated from a cystocele or rectocele, which is quite easy when the sound or finger is used in the manner already indicated.

SUB-URETHRAL ABSCESS.—A sub-urethral abscess forms a cystic swelling in the vaginal wall. It is tender to the touch, causes pain on micturition, and on pressure pus exudes from the urethra. At times it is possible to pass the point of a sound along the urethra into the cyst.

MYOMA OR FIBROMA.—These tumours present as smooth movable swellings covered by unaltered vaginal mucous membrane. They may be very hard in some cases, whilst in others they may be soft enough to give the impression of being cystic.

A myoma or fibroma may be mistaken for a sarcoma in that they both form hard swellings in the vaginal walls, but the malignant growth is darker in colour than the normal mucous membrane.

Though usually sessile, they may be pedunculated, in this respect differing from sarcomata.

Myomata or fibromata are generally found in middle life, whereas sarcomata may occur at any time.

SARCOMA.—Sarcoma of the vagina is very rare. It may present as a hard, indurated, dusky-coloured mass, or as an irregular ulcerating growth. A variety of sarcoma occurs in young children, and is " botyroid " in form, resembling, like sarcoma of the cervix in young children, a bunch of grapes. A sarcoma grows very quickly, whereas a myoma or fibroma grows slowly, and although the two latter may become infected and ulcerate slightly, or even become gangrenous, this rarely happens unless they are large enough to project through the vaginal orifice, when small patches of ulceration may result from friction. Sarcoma, on the other hand, breaks down early, forming an ulcerating growth which bleeds easily on being touched.

Apart from infection, which is rare, the innocent tumours cause little or no trouble until sufficiently large to press on the urethra, obstruct labour, cause dyspareunia, or projecting through the vaginal orifice give rise to discomfort at the vulva.

Sarcoma, on the other hand, comparatively soon commences to cause

pain and hæmorrhage, yet in its early stages a sarcoma may so resemble a fibroma that only a microscopical examination will settle the diagnosis.

CARCINOMA.—Carcinoma of the vagina sometimes forms a warty swelling in the vaginal wall. The ulcerative form is dealt with under ulceration of the vagina (see p. 263).

Chorio-carcinoma of the vagina is very characteristic. A purple-coloured or black nodule rapidly forms, which is easily mistaken for a hæmatoma or thrombosed vein. The occurrence of such a nodule shortly after confinement or abortion should be regarded with the utmost suspicion (see p. 193).

ADENO-MYOMA OF THE RECTO-VAGINAL SEPTUM.—This rare growth is usually discovered accidentally, unless it has grown to such a size that it interferes with the function of the lower bowel. In many of the cases reported, the patient first sought relief for hæmorrhage which had a definite cause apart from the tumour. The tumour is composed of hard nodular masses which can be felt in the posterior fornix fixed to the back of the cervix and, as a rule, only movable with it. There is no tenderness. When the growth has involved the rectal wall it can be felt per rectum.

Nothing is known as to the rate of growth of these tumours, and in some of the reported cases the mass has not given rise to any trouble, except that due to size and environment, but in others the progress has been that characteristic of malignancy.

ABNORMAL CONDITIONS OF THE VULVA.

The vulva can be examined most thoroughly and easily with the patient in the lithotomy position. Such a position, however, is not always the most convenient or for the time being the most desirable, in which case the modified left lateral position (see p. 24) is the next best.

An examination of the vulva may disclose that—

The vulva is malformed.
The vulva is inflamed.
The vulva is the seat of a tumour or swelling.
The vulva is ulcerated.
Some structure is protruding through the vaginal orifice.
The perineum is deficient.

THE VULVA IS MALFORMED.

ADHESION OF THE LABIA.—Adhesion of the labia is, as a rule, discovered in babies, when it is a congenital condition, or in young children who have been the subjects of some acute infective disease. If the amount of adhesion is not sufficient to dam back the menstrual fluid, the

condition may not be discovered till marriage, when it will be the cause of dyspareunia.

The adhesion is always present at the posterior part of the labia majora and minora, and according to its extent the rest of the labia may be adherent right up to their anterior borders, causing difficulty in micturition, whilst retention of the menstrual fluid may result.

HYPERTROPHY.—The size of the labia and clitoris varies within normal limits. One labium majus may, apart from disease, at times be distinctly larger than its fellow.

A certain amount of hypertrophy of the labium minus is not particularly uncommon and is generally unilateral. As a race characteristic, marked hypertrophy of the labia minora is found in Hottentots, so much so that in some cases the labia may extend as far as the knees.

No cause can be found for the unilateral hypertrophy ; some authorities attribute it to masturbation, but probably without justice.

Hypertrophy of a labium minus may, if at all marked, cause a certain amount of distress from the friction which results owing to its projecting beyond the labia majora.

ATROPHY.—The vulva atrophies as the result of the menopause, whether natural or artificial, the decrease in size being particularly noticeable in the labia majora, so that the labia minora are perpetually disclosed and the vaginal orifice gapes.

Atrophy of the vulva is also associated with the condition known as kraurosis (see p. 275).

FIG. 131.—VIRGIN HYMEN, CIRCULAR TYPE.

The vulva is sometimes particularly small, not increasing in size as it naturally should with the growth of the girl. Such cases are usually associated with amenorrhœa, due to deficient development of the uterus and ovaries.

ABNORMALITIES OF THE HYMEN.—The shape of the hymen is very variable. In the young virgin it forms a somewhat tense, smooth membrane stretching across the vaginal orifice and perforated by a single circular aperture in its centre (Fig. 131). Not infrequently, however, it is fairly soft in consistence, and exhibits a number of petal-like folds. The aperture may be situated at its upper part, in which case the hymen is crescentic (Fig. 132), while much less commonly there are two apertures

FIG. 132.—VIRGIN HYMEN, CRESCENTIC TYPE.
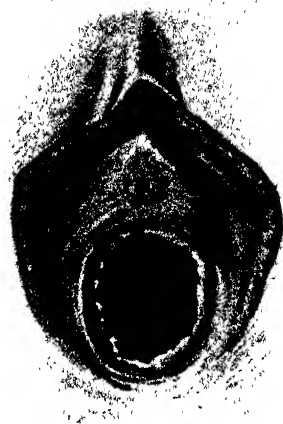
FIG. 133.—HYMEN AFTER DEFLORATION.
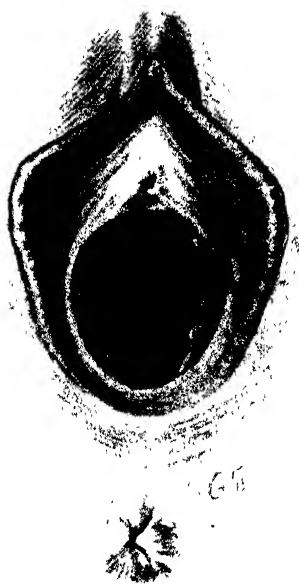
FIG. 134.—HYMEN AFTER CHILD-BEARING.

FIG. 135.—"IMPERFORATE HYMEN."

...ying side by side ; rarely it is cribriform. After defloration the orifice is much larger, and usually lacerated in one or more directions (Fig. 133) ; but occasionally, when the hymen is elastic in nature, it escapes such injury.

During the passage of the head of the child the hymen is so injured that portions of it are destroyed, and it is afterwards represented by tags and projections known as carunculæ myrtiformes (Fig. 134). The
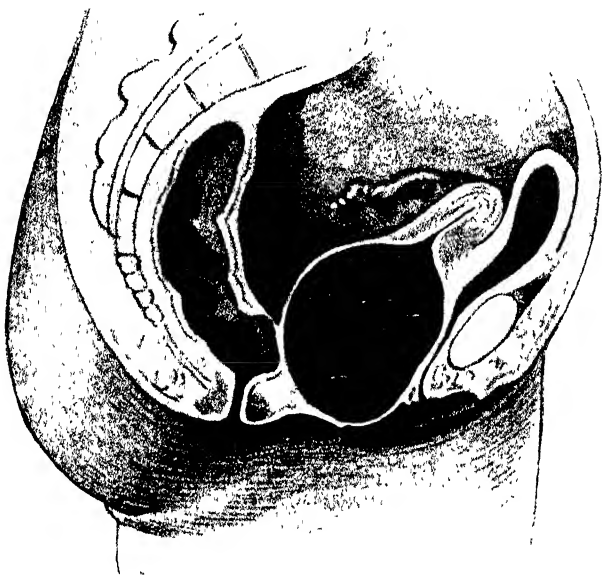
FIG 136 —"IMPERFORATE HYMEN." THE VAGINA FORMS A RETENTION CYST.

same appearance may result from extreme operative dilatation of the vaginal orifice.

"IMPERFORATE HYMEN."—The condition known as an "imperforate hymen" is as a rule not discovered till some time after the advent of puberty.

The practitioner observes, on separating the labia, a purple swelling bulging through the vaginal orifice, and a closer examination discloses that the hymen though stretched tightly over it is not itself imperforate, the septum being really formed as a result of want of fusion between the lower end of the Müllerian ducts and the uro-genital sinus (Fig. 135).

The history of such cases is usually as follows : The girl has passed

the age at which the periods should have appeared, and at first no anxiety
is felt, the case being regarded as one of late menstruation.

She may complain of monthly aching and pain in the abdomen, or
this may become evident after a time. At any rate, these symptoms
gradually increase in severity, especially the abdominal pain.

For the symptoms and signs when the condition is allowed to persist
until an abdominal swelling can be felt, see page 151, and as there
related, at times the first urgent intimation may be retention of urine
due to the great intra-vaginal pressure, the urethra being flattened.

As a rule the patient will have been treated for some while for delayed
menstruation (see p. 45).

An examination per rectum will disclose that the vagina is more or
less dilated and forms a retention cyst (Fig. 136).

An interesting, though very rare, condition of a similar kind is re-
tention of the menstrual fluid in one-half of a double vagina (see p. 257).

DOUBLE VULVA.—This is a very rare malformation, and is, when
present, generally found in stillborn children. Occasionally a female
thus affected has survived her birth, when she most often presents other
evidences of maldevelopment.

THE VULVA IS INFLAMED.

Acute vulvitis in adults is generally due to a venereal infection, less
frequently to infection of a wound caused by childbirth, an accident, or
from scratching or irritation due to pediculi, oxyurides, or dirt. Diabetic
urine may also give rise to vulvitis from the irritation it causes.

The vulvitis of babies and children may be due to one or other of the
above-mentioned causes, except childbirth ; but it frequently occurs
apart from them all, and its cause cannot be detected.

The practitioner must be very guarded in his statements if he suspects
the inflammation to be due to a gonorrhœal infection, and should certainly
not give a definite diagnosis unless the gonococcus has been identified
in the discharge, and even then it may be very inadvisable to do so.

In the case of small children the practitioner should remember that
any remarks of his when the mother brings the child for examination
may be misinterpreted, wilfully or otherwise, and may be used to bring a
false accusation against some person. In such cases, therefore, he should
say very little, but be very careful to note any other signs that would
assist in the diagnosis, such as bruising or laceration of the vaginal orifice,
and if any stains are found on the underlinen these should be carefully
examined for spermatozoa, and if the supposed rape is of recent origin
spermatozoa may be found in the vagina (see p. 409).

In acute vulvitis the labia are red and somewhat swollen, and the

inflammation may extend a little to the adjacent surfaces, so that the inner side of the thighs may be red. The parts are very tender, and when the labia are separated a marked discharge of pus escapes. Search should always be made for the ulceration or papule formation characteristic of soft chancre and syphilis.

It is important to decide, if possible, whether the infecting organism is the gonococcus or not, both from the point of view of treatment, and also because the practitioner's testimony may be required in a court of law.

The only certain way by which a diagnosis can be made is by cultivating the gonococcus from the discharge.

Short of this, a smear preparation can be made, when it may be possible to identify the organism, but in some cases even an experienced bacteriologist will be in doubt.

Clinically a fair estimation of the cause may be formed by the severity of the disease and complications that may arise, although the practitioner should never express a definite opinion on these alone.

Thus, if the vulva is very swollen and tender, so that the patient finds it practically impossible to walk or even sit down without great pain, the infection is almost certainly venereal.

A very profuse green discharge, pain on passing water (urethritis), and inflammation of the orifices of the vulvo-vaginal ducts are also most suggestive of gonorrhœa, as is the history of a *sudden* onset. The presence or subsequent occurrence of certain complications is of further assistance, such as a vulvo-vaginal abscess, endometritis, salpingitis, salpingo-oophoritis, peritonitis, gonorrhœal arthritis, gonorrhœal ophthalmia, proctitis, septicæmia, ulcerative endocarditis, or cystitis.

Marked enlargement of and redness over the vaginal glands suggest soft chancre, whilst "shotty" painless enlargement most probably indicates syphilis.

CHRONIC VULVITIS.—The swelling in this case is not well marked. The patient complains of itching, and abrasions due to scratching may be present.

The urine should always be very carefully examined in cases of vulvitis.

GANGRENOUS VULVITIS.—Gangrenous vulvitis is due to infection of a wound, to venereal infection, or to an attack of one of the acute specific fevers in children, when it is known as "noma."

Noma is a very fatal and rare disease, in which one or other side of the vulva becomes swollen, hard, and black, this being followed by ulceration and rapidly spreading gangrene.

DIPHTHERITIC VULVITIS.—Occasionally during the course of diphtheria the vulva may become infected, with the result that the labia become swollen, inflamed, and tender, and patches of diphtheritic membrane can be identified. This condition may also occur independently of

diphtheria in the throat, but before arriving at such a diagnosis the practitioner should take a swab from the membrane and have the growth cultivated.

In one case of this kind that we saw, venereal ulceration was very closely simulated.

VULVO-VAGINAL ABSCESS.—An abscess in the vulvo-vaginal gland (Bartholin's gland) presents as a very tender hot swelling in the posterior half of the labium majus ; usually the infection is unilateral, but occasionally it may be bilateral.

The labium minus is stretched over its surface, and at first the swelling is hard from œdema of the surrounding tissues, but as suppuration occurs fluctuation can gradually be detected. The appearance of the skin over its outer surface may be normal, but over the inner surface the mucous membrane is reddened.

The condition is nearly always due to gonorrhœal infection, of which there may be other signs present, such as vulvitis and urethritis.

If the abscess is not opened it spreads along the side of the vaginal introitus, and eventually bursts on its inner surface.

FIG 137.—LEUKOPLAKIC VULVITIS.

HERPES.—Herpes of the vulva is not a very common affection. It may appear during the course of some acute disease, or it may be independent of this. The vesicles appear on the labia majora as a rule.

Its appearance is heralded by intense pain in the area supplied by the affected nerve. It is not in any way symmetrical, and forms small groups

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of vesicles which at times coalesce, and which when they have burst leave small, shallow, circular erosions of a pale whitish colour.

THRUSH.—Thrush of the vulva is a rare condition. It may be found towards the end of some very debilitating disease, such as phthisis or cancer. Small whitish patches slightly raised are seen, with the adjacent tissues somewhat reddened and painful. When the condition is marked the vulva will be a little swollen. On removing the white patches the underlying tissue is found to be red and raw.

When the white patches are shed, small shallow and very painful ulcers result.
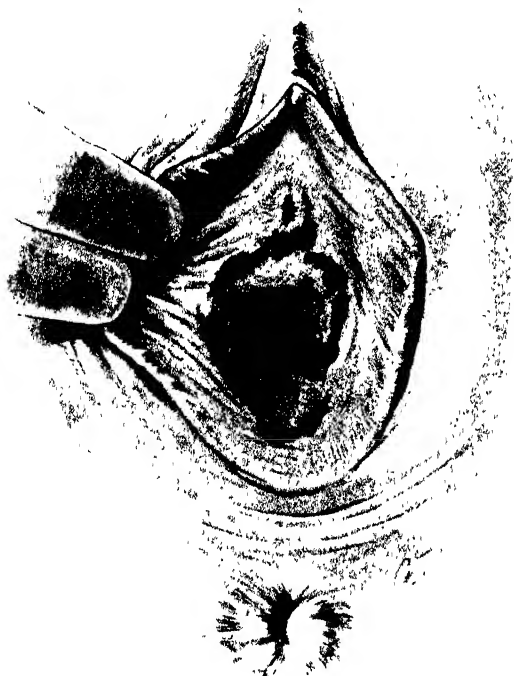
LEUKOPLAKIC VULVITIS.—Leukoplakic vulvitis is an inflammatory state affecting a definite area of the vulva. This area comprises the labia minora, the inner surfaces of the labia majora, the hood of the clitoris, and the skin beyond the vaginal orifice. The area terminates anteriorly in a V-shaped point, but posteriorly may extend over the peri-

FIG. 138 - KRAUROSIS VULVÆ.

neum and around the anus. The vestibule, the urethral orifice, and the vaginal introitus escape. In the earliest stage, which is not so often seen, the surface looks merely red and slightly swollen. When the disease is fairly developed the appearance is typical. The affected surface is whitish in colour, owing to proliferation of the epithelium ; the labia minora, though thickened, are shrunk so that they form a couple of ridges which coalesce over the clitoris and hide it from view. Reddish-coloured fissures, excoriated patches, and warty, heaped-up accumulations of epithelium are often present (Fig.

137).   In   many   instances   the   condition   eventually   passes   into carcinoma.

In very old-standing cases spontaneous retrogression may occur, the area, though still white in colour, becoming smooth and flattened out and no longer irritable.

The leading symptom of this disease is pruritus, often most distressing in its intensity.   Its causation is not known, but it is quite certain that it is not due to syphilis (see also p. 110).

KRAUROSIS VULVÆ.—The parts affected are the vaginal introitus, the vestibule, and the meatus urinarius, the very reverse of what occurs in leukoplakic vulvitis.   In the earlier stages kraurosis appears as a number of small scarlet patches surrounding the vaginal and urethral orifices.   These patches are intensely tender.   A caruncular condition of the meatus is often present as well.   Microscopically the patches exhibit a cellular structure, with many large dilated capillaries, and the epithelium over them is thinned.   The histological picture is identical with that presented by a urethral caruncle, with which, as has been said, the condition is often allied.   The vaginal orifice even at this stage appears narrowed.   In the later stages the patches become pale, and the mucous membrane generally becomes thin, atrophic, and shrunken, while the vaginal orifice undergoes marked constriction.   It is an altogether distinct affection from leukoplakic vulvitis, and bears no relation to carcinoma of the vulva (Fig. 138).

The leading symptoms are soreness, smarting, and burning pain. Dyspareunia is present, both on account of the sore condition and the narrowing of the vaginal orifice.

THE VULVA IS THE SEAT OF A TUMOUR.

The practitioner in examining the vulva may discover a tumour growing from some portion of it.   The following are those most commonly found :—

CARUNCLE, CARCINOMA, AND PROLAPSE OF THE URETHRA.—For a description of these conditions, see pages 123 and 124.

FIBROMA.—A fibroma usually springs from one of the labia majora. It is insensitive, and is often attached by a distinct pedicle.   Occasionally there may be one or two areas of superficial ulceration, and it may feel quite soft, owing to myxomatous degeneration.

LIPOMA.—These fatty tumours may be pedunculated or sessile.   They are rare, are found in the labium majus, and occasionally reach a large size.   They are soft and lobulated on palpation.

PAPILLOMA.—Three varieties of papillomata are found in the vulva— simple, venereal, and malignant.

Simple Warts.—Simple warts corresponding to those found in other parts of the body may be found on the vulva, usually the labia majora or mons. They are flat-topped, often pigmented, and usually cause no trouble, though they may form the starting-point of melanotic sarcoma.

Venereal Warts.—This variety of wart, though commonly attributed to the gonococcus, is due to infection by some organism, the nature of

FIG. 139.—"GONORRHŒAL" WARTS.

FIG 140.—CARCINOMA OF THE VULVA—WARTY TYPE.

which is not known. It is found most often in unclean women of the lower classes, and hence the practitioner is liable not to recognize the condition when it occurs in respectable women.

The warts are always multiple, and from a very small size, so that they are hardly noticeable, they may grow to that of a fœtal head. These warts are generally found on the labia and fossa navicularis (Fig. 139).

On their exposed surface the warts are dry, but if the labia are

separated it will be found that the non-exposed surface is moist and is secreting a very offensive discharge.

The symptoms caused are those of irritation.

FIG. 141.—CYST OF RIGHT LABIUM MINORA.

Malignant Wart.—Carcinoma of the vulva at its outset may assume the form of a wart ; *such a formation when associated with a leukoplakic state of the vulva should always be regarded as malignant.* It is most

important for the practitioner to remember this (Fig. 140, see p. 274).

ELEPHANTIASIS.—Elephantiasis is very rare in this country, being due as it is in nearly every case to obstruction of the lymphatics by filaria.

Very rarely a case of elephantiasis may be met with in which after a most careful examination no such cause can be detected. Maclean described such a one.

FIG. 142.—CYST OF BARTHOLIN'S GLAND.

The labia minora are at times the seat of an elephantoid hypertrophy which is always due to syphilis.

SEBACEOUS CYSTS. — Sebaceous cysts are not uncommon on the labia majora. They present the same features as those occurring elsewhere.

CYSTS OF THE LABIA MINORA.—Translucent cysts of the labia minora are sometimes found. They arise from one of the odoriferous glands (Tyson's glands) which are irregularly scattered over the inner surface of the vulva (Fig. 141).

VULVO-VAGINAL CYST ("Bartholin's Cyst").—Cystic distension of the vulvo-vaginal gland presents as an oval swelling in the posterior third of the labium majus, and has the lower part of the labium minus spread over it (Fig. 142). The skin and mucous membrane covering it are normal in appearance. It is an after result of inflammation of the gland.

It is seldom larger than a hen's egg, but occasionally its size increases beyond this and it then extends by the side of the vagina.

The symptoms complained of are at first purely mechanical ; it may cause a certain amount of discomfort on walking or give rise to dyspareunia. Sooner or later, however, the cyst inflames or it may even suppurate, becoming very tender and painful. Spontaneous rupture is common and leads to temporary subsidence of the symptoms, which, however, nearly always recur.

It has to be diagnosed from other swellings in this locality, such as a hernia, a hæmatoma, and a hydrocele of the canal of Nuck.

INGUINAL HERNIA.—The swelling caused by an inguinal hernia occupies the upper part of the labium majus, the lower portion remaining free. Its relation to the pubic spine is important; it lies inside and above it. It is elastic to the feel and resonant on percussion, unless the contents of the sac are mostly omentum, in which case it will feel doughy and be dull on percussion.

The swelling may be reducible or may slip back when the patient lies down.

Such a hernia may contain the ovary, uterine tube, appendix, and has even contained a gravid uterus of three months.

An inguinal hernia must not be confounded with one of the femoral variety, in which the swelling lies external to and below the spine of the pubis and never inside the labium majus.

An inguinal hernia at times simulates closely a hydrocele of the canal of Nuck.

HYDROCELE OF THE CANAL OF NUCK.—A hydrocele of the canal of Nuck may be encysted or not. If the tube of peritoneum accompanying the round ligament is not shut off, the hydrocele presents as a small swelling in the upper part of the labium majus, which on pressure disappears at once without a gurgle, and also directly the patient lies down.

If the tube of the peritoneum is shut off from the general peritoneal cavity, then the hydrocele is encysted, and it is this variety which is most likely to cause trouble in diagnosis.

The history may be of assistance, since these encysted hydroceles have often been present since birth.

A small, elongated, somewhat movable cystic swelling is found in the upper part of the labium majus. Its upper border reaches to or beyond the superficial inguinal ring. The swelling, if large, may be shown to be translucent, is dull on percussion and not reducible.

At times a hydrocele of this nature becomes inflamed, and it may then be a very difficult thing to diagnose it from a strangulated inguinal hernia.

A condition very closely simulating a hydrocele of the canal of Nuck is a hydrocele of an inguinal hernial sac. In this condition the neck of the sac has become plugged by a piece of adherent omentum, and the sac beyond it has become distended with serous fluid.

HÆMATOMA.—A hæmatoma of the labia is generally an easy lesion to diagnose. The practitioner will find a doughy or hard tender swelling occupying any part of the labia majora or minora. There will be discoloration of the skin according to the time the patient comes under observation after the lesion started. There will be a history of some accident, assault, or recent childbirth.

VARICOSE VEINS.—Varicose veins of the vulva form a lesion which is easily recognizable. The dilated veins can be seen quite easily underneath the skin.

ŒDEMA OF THE VULVA.—Œdema of the vulva, apart from inflammation, is seen in serious renal disease, and in cardiac and pulmonary disease in which there is great obstruction to the venous circulation. It also at times occurs in pregnancy, when it usually betokens pregnancy nephritis, but may be solely due to pressure or hydræmia. Ovarian or fibroid tumours impacted in the pelvis may produce similar œdema from pressure.

FIG. 143 CARCINOMA OF THE VULVA—
SINGLE ULCER

THE VULVA IS ULCERATED.

Ulceration of the vulva is generally due to carcinoma or syphilis. More rarely it is due to traumatism, septic infection, tubercle, rodent ulcer, or sarcoma.

CARCINOMATOUS ULCERATION.—The commonest variety of carcinoma of the vulva is that which occurs in the squamous epithelium covering the labium minus, the inner side of the labium majus, or the hood of the clitoris. In nearly all instances carcinoma of the vulva has been preceded by leukoplakic vulvitis, and the patient gives a long previous history of vulval pruritus (see p. 274).

It often commences as a small warty nodule which is paler than the surrounding skin, and which may occasionally increase to the size of a tangerine orange before it ulcerates. In other cases it assumes the form of an ulcer from the first (Fig. 143). The ulcer, which varies in size, may eventually become very large and saddle-shaped, involving the whole

of the labia (Fig. 144), and later spreading on to the thighs, perineum, and pubes.

The ulcer is excavated and its edges are thickened and irregular. The base of the ulcer is sloughy and secretes an offensive discharge.

There is comparatively little bleeding unless some large vessel is opened, and it is surprising how little pain is complained of, a fact which induces the patient to postpone seeking advice until the disease has well advanced.

The inguinal glands are enlarged and hard, according to the side the cancer is situated, and may be so on both sides if the growth has extended across the middle line.

Later on, rapid softening may occur simulating a suppurating bubo, which taken in conjunction with an ulcerated condition leads to a mistaken diagnosis of venereal disease.

The patient is generally between 50 and 60 years of age, and has had the disease for some time before she seeks advice.

Columnar-celled carcinoma of the vulvo-vaginal gland is a rare affection. It presents as a hard, round, painless swelling in the posterior part of the labium majus, the skin covering it being normal. As the disease advances it ulcerates, and in the end a large fungating mass is formed infiltrating the tissues in its

FIG. 144.—CARCINOMA OF THE VULVA—
SADDLE-SHAPED ULCER.

neighbourhood. Carcinoma may also start in the columnar cells lining one of the numerous odoriferous glands scattered about the vulva.

SARCOMA.—Sarcoma of the vulva is very rare. Of the different varieties melanotic sarcoma is the commonest.

In a marked majority of cases the patients have passed the menopause. The sarcoma forms a purple or black growth varying in size up to that of a walnut. As a rule it soon ulcerates, and the bleeding is troublesome ; occasionally ulceration occurs late.

The inguinal glands become involved quicker than in carcinoma.

CHANCRE.—A syphilitic chancre may be found on any portion of the
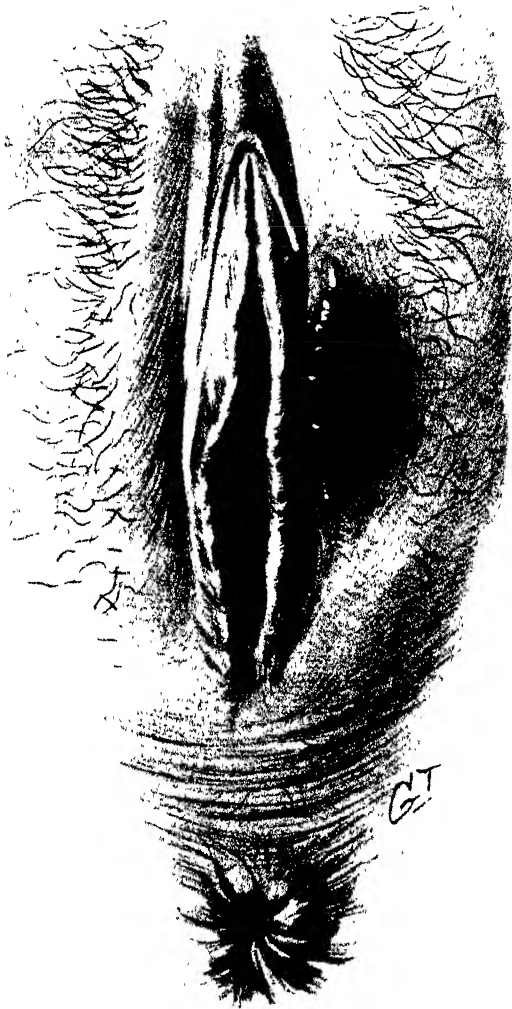
FIG. 145. - HARD CHANCRE OF LABIA MAJORA.

vulva, but in most cases is situated just at the vaginal orifice, on the fossa navicularis, or on the labia minora.

It may present as a small erosion, a papule, a small ulcer, or more rarely as a true Hunterian chancre (Fig. 145), that is, as a small nodule

having the sensation of a piece of cartilage that has been inserted just beneath the surface of the skin.

As a rule, vulval chancres are not indurated. The ulcer has clean-cut edges which are undermined, and its base is shiny. There is generally marked œdema in the neighbourhood of the chancre, and the glands are enlarged and shotty. The ulcers are frequently multiple.

There may be a history of infection. The patient may have a sore throat and rash, or these may appear later.
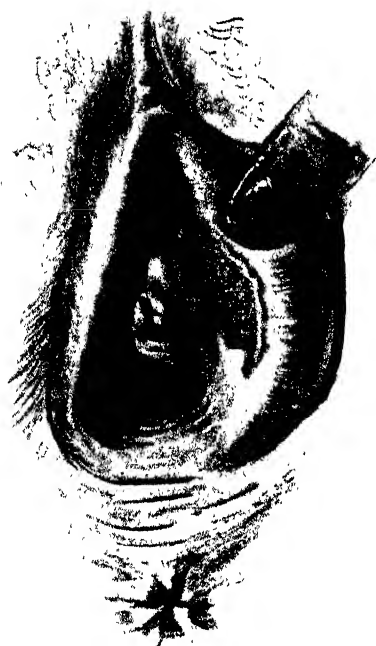
FIG. 146.—A SOFT VENEREAL SORE.   FIG 147.—SECONDARY SYPHILITIC ULCERS

Soft venereal sores not due to the spirochæte are also common. They are often multiple, their base is sloughy or exuding pus, and their edges are sharply cut (Fig. 146). Accompanying the ulcer there is very marked œdema of the labia, especially the labia minora, the parts on superficial inspection presenting a characteristic puffy and reddened appearance. It is, however, most important for the practitioner to realize that the question whether an ulceration is syphilitic or not cannot be determined by mere inspection ; and since the successful treatment of syphilis chiefly depends on its early recognition it is essential that the

discharge of all suspected venereal ulcers should be examined for the presence of the spirochæta pallida. Some of the discharge of the ulcer should therefore be smeared on a slide, and if the practitioner does not possess the necessary knowledge or apparatus it should be dispatched to a competent bacteriologist. Wassermann's test should also be applied, but is not of value unless the infection has been incurred—days previously.

ULCERATION OF SECONDARY SYPHILIS.—The ulceration due to secondary syphilis is multiple. It may diffusely affect almost the whole of the vulva, but more commonly is limited to the surface of the labia minora, which are always more or less œdematous. The multiple shallow ulcers are situated on a raised surface, and may be scattered over the labia majora and round the perineum and anus (Fig. 147). The discharge is serous, sometimes blood-stained and foul. The accessible lymph glands all over the body are felt to be enlarged, and other signs of the disease, such as rash, sore throat, etc., can usually be found if search be made for them.

ULCERATION OF TERTIARY SYPHILIS.—This is very rare and is due to breaking-down gummata, and marked deformity may result. At times the labia greatly hypertrophy.

TUBERCULOUS ULCERATION.—This condition is a rare one and is associated with advanced tuberculosis in other situations.

A microscopical examination of a portion of the tissue will be required to settle the diagnosis.

RODENT ULCER.—Rodent ulcers may begin on the skin covering the labia majora. As the distinction between this form of malignant disease and ordinary squamous-cell carcinoma is very difficult, the cases should always be treated on the graver assumption.

TRAUMATIC ULCERATION.—One of the commonest causes of dyspareunia is to be found in the small ulcers or fissures which at times may be found in the fossa navicularis, and are usually due to unsuccessful attempts at coitus. Similar fissures may at times be detected in the vestibule or within the vaginal orifice giving rise to the same symptom.

BOILS.—Boils may appear on the vulva as on any other portion of the body. They are to be found at the base of a hair, and after bursting may form small ulcers which quickly heal.

SOME STRUCTURE IS PROTRUDING THROUGH THE VAGINAL ORIFICE.

The following structures may be seen to be protruding through the vaginal orifice : The anterior vaginal wall, the posterior vaginal wall, the whole vagina, tumours of the vaginal wall, the cervix, the inverted uterus, tumours of the cervix or corpus uteri, and a urethrocele.

ANTERIOR VAGINAL WALL.—When the anterior vaginal wall protrudes through the vaginal orifice the base of the bladder accompanies it, and the condition is known as a cystocele (see p. 346).

There is no difficulty in recognizing the condition ; if any doubt exists, a sound should be passed into the bladder, and it will be found to enter the cystocele.

A cyst of the anterior vaginal wall may simulate a cystocele, but it cannot be reduced, and the sound does not pass into it (Fig 148).

A dilatation of the urethra, if large enough, may cause a projection into the vagina and thus simulate a cystocele or cyst of the anterior vaginal wall The nature of such a swelling can be detected, for if a probe be passed into the urethra it can be made to enter the cystic dilatation.

FIG 148 —CYSTOCELF AND RFCTOCFLE

An abscess of the posterior urethral glands may cause a similar appearance

POSTERIOR VAGINAL WALL —Prolapse of the posterior vaginal wall is commonly known as a " rectocele," because the rectum may come down with it Quite commonly, however, the rectum is not displaced, and the vaginal wall alone is prolapsed (see p. 346).

A cyst of the posterior vaginal wall may resemble in appearance a prolapse of this structure.   It cannot, however, be reduced   A rectocele is distinguished by passing the finger into the rectum and from thence into the protruding structure (Fig. 148).

THE WHOLE VAGINA.—Extroversion of the vagina, commonly known as complete prolapse of the uterus, is easily diagnosed, the vaginal canal being obliterated and the cervix being situated at the apex of the protruding mass (p. 346). Ulcers due to friction are commonly seen on the vaginal wall and cervix (Fig. 149), and may simulate malignant disease.

Following removal of the uterus, and more especially after vaginal hysterectomy for procidentia, the whole of the vagina may become inverted and protrude through the vaginal orifice. There is no difficulty in distinguishing such a condition as this, since the vaginal canal, as such, is obliterated and there is a scar at the apex of the protruding structure indicating the previous site of the cervix.

TUMOURS OF THE VAGINA.—Tumours of the vaginal wall, both cystic
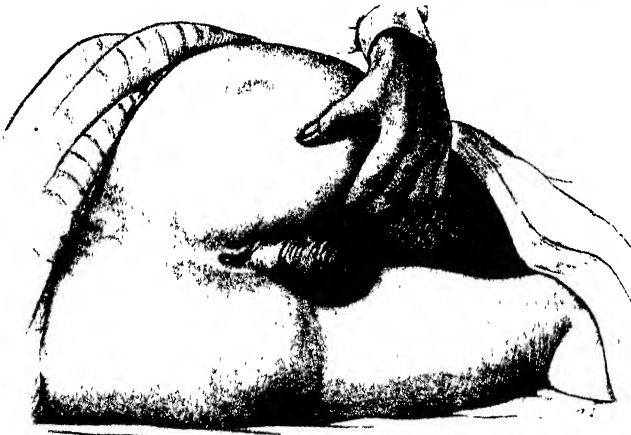
FIG. 149.—COMPLETE PROLAPSE.

and solid, are dealt with on pages 264 to 267. If of sufficient size they may protrude through the vaginal orifice and eventually become ulcerated. The cystic tumours more especially may be confused with prolapse of the vaginal wall. We have already dealt with this aspect of them. The solid tumours may be mistaken for tumours of the corpus or cervix, but a careful vaginal examination will at once detect their source of origin.

CERVIX.—The cervix may protrude through the vaginal orifice under three conditions: 1. When the body of the uterus has descended with the cervix. 2. When the supra-vaginal portion of the cervix is elongated. 3. When the vaginal portion of the cervix is hypertrophied (Fig. 150).

It would seem impossible to mistake a protruding cervix for any other structure since in its centre will be seen the external os into which the sound can be passed, but rarely a form of congenital elongation of the

cervix is met with in which this structure is so attenuated that it might
be mistaken for a mucous polyp (Fig. 119).   The differential diagnosis of

Fig 150 —Prolapse of the Cervix.

downward displacement of the uterus and cervical hypertrophy without
prolapse is discussed on pages 216 to 219.

THE INVERTED UTERUS.—An inverted uterus is more or less pear-shaped, has a velvety soft surface, often ulcerated, and bleeds on being touched. A careful examination may detect the orifices of the uterine tubes. On a casual examination chronic inversion of the uterus may easily be mistaken for a fibroid polypus of the body of the uterus. Such an error, followed by removal of the tumour, has led to a fatal result.

The differential diagnosis of these two conditions is discussed on page 221.

TUMOURS OF THE CERVIX OR CORPUS UTERI.—A fibroid polypus of the body or neck of the uterus, or a malignant growth of the neck of the uterus, may protrude through the vulval orifice.

With the diagnosis of fibroid polypi we have already dealt. In young females a sarcoma of the cervix may protrude through the vaginal orifice, having a grape-like conformation. A fungating carcinoma of the cervix very rarely may be large enough to protrude through the vulva.

A growth of this nature may on inspection somewhat resemble an inverted uterus, or more likely a fibroid polypus of the uterus or a tumour of the vaginal wall. A carcinoma, however, will be much more irregular in appearance, will be ulcerated, its site of origin can be detected on digital examination of the vagina, and, most striking sign of all, the tumour will be very friable, large pieces being easily detached by the finger, with the resulting free hæmorrhage.

PART IV.

TREATMENT.[1]

TREATMENT OF AMENORRHŒA.

Amenorrhœa without Local Physical Signs. — ADOLESCENT AMENORRHŒA.—The amenorrhœa of adolescence does not require any special treatment. The absence of menstruation *per se* does not injure the health of the girl, and there is no reason to prescribe any special treatment because the periods are late in appearing, or, having appeared, recur at long intervals. Occasionally a girl who is going to be married will consult a doctor with a view of having the periods " brought on," or one who is married will do so in the desire for maternity.

There is no drug known which will, with certainty, induce menstruation. At times certain drugs are successful, but whether in consequence of or coincident with their administration is uncertain. These drugs are permanganate of potash, apiol, and ovarian (corpus luteum) extract. Permanganate of potash is prescribed as follows :—

R Potassii Permanganatis, gr. i. to ii.
   Kaolini,   gr. ii.
   Vaselini,   q.s.
       Fiat pil.
Sig.—One pill to be taken in water three times a day the week before the period is due.

R Potassii Permanganatis, 1 to 2 grms.
   Kaolini,   2 grms.
   Vaselini,   q.s.
       Fiat pil. xv.
Sig.—One pill to be taken in water three times a day before the period is due.

R Apiol, 2 to 5 minims,
    in capsule.
Sig.—One capsule to be taken in water night and morning the week before the period is due and during the period.

R Apiol, 2 to 5 c.c.
   Divide into 15 capsules.
Sig.—One capsule to be taken in water night and morning the week before the period is due and during the period.

R Ext. Corporis lutei, gr. v.
Sig.—One tablet to be taken with water three times a day, increased to two if necessary.

R Ext. Corporis lutei, 5 grms.
   Divide into 15 tablets.
Sig.—One tablet to be taken with water three times a day, increased to two if necessary.

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[1] Each prescription is duplicated, the quantities in the second being expressed in grammes and cubic centimetres according to the ready method suggested by Dr. Verdon Roe He pointed out that the figures indicating the number of grammes and cubic centimetres in a prescription for *15 doses*, according to the metric system, are the same as those indicating the number of grains and minims in a prescription for a *single dose* according to the English system : a gramme being roughly equal to 15 grains.

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AMENORRHŒA OF CHLOROSIS.—This can often be successfully treated by strict attention to the bowels, perfect regularity in this respect leading in many cases to a resumption of the menstrual function. In addition, the most successful drug is iron, in one or other of its various preparations. As iron is a cause of constipation, it is necessary when prescribing it to add to the pill or mixture an aperient, or to prescribe an aperient separately. In addition, the practitioner should remember that a very small proportion of the ingested iron is retained in the body, and it is therefore necessary to give as much of this drug as can be tolerated. As indigestion is often present in these cases and as iron is apt to interfere with the digestion, it is sometimes better to start the treatment with such a mixture as the following :—

R Potassii Bicarbonatis, gr. x.
   Tincturæ Zingiberis, ℳ x.
   Spiritus Chloroformi, ℳ v
   Infusi Rhei,   ℥ss
   Infusum Gentianæ, ad ℥i.

Sig.—To be taken three times a day after meals.

R Potassii Bicarbonatis, 10 grms.
   Tincturæ Zingiberis,   10 c.c.
   Spiritus Chloroformi,   5 c.c.
   Infusi Rhei,   240 c.c.
   Infusum Gentianæ, ad 480 c.c.
          Fiat Mistura.

Sig.—Two tablespoonfuls to be taken three times a day after meals.

If the rhubarb in this mixture is not sufficient to secure a proper and daily evacuation, the following powder can be prescribed in addition :—

R Magnesii Sulphatis, gr. lx.
   Sodii Sulphatis,   gr. xxx.
   Magnesii Carbonatis, gr. v.
   Pulveris Zingiberis, gr. iii.

Sig.—The powder to be taken before breakfast with a tumblerful of hot water.

R Magnesii Sulph.,   60 grms
   Sodii Sulphatis,   30 grms
   Magnesii Carbonatis, 5 grms.
   Pulveris Zingiberis, 3 grms.
       Divide into 15 powders.

Sig —The powder to be taken before breakfast with a tumblerful of hot water.

It is not necessary to enumerate the various preparations of iron. The practitioner will probably have his favourite form, and, as we have indicated, it does not matter in which way the iron is prescribed.

Certain patients are unable to take iron, in which case arsenic is often successful ; or at times a combination of arsenic and iron is found to best suit the patient.

As a rule such treatment will be successful. Occasionally the patient does not react to it, when a course of iron waters and baths may be taken at some appropriate English or Continental Spa, when the novel surroundings and the regular habits associated with this method of treatment may successfully result in a return of the menstrual function.

Residence at the seaside and sea-bathing, or a stay at an altitude of 5000 to 6000 feet, may be successful when other means have failed.

AMENORRHŒA OF LACTATION.—If a mother nurses her child for the

normal period of nine months, it is natural, though not constant, for her periods to be in abeyance. The amenorrhœa associated with prolonged lactation, which may have been persisted in with the mistaken idea of preventing pregnancy or because the mother could not afford to purchase milk for her child, is due to deterioration of the general health, and if called upon to treat it the practitioner will do so on general lines. Occasionally an excessive period of breast feeding is followed by atrophy of the uterus (superinvolution), in which case the amenorrhœa will be incurable.

AMENORRHŒA FOLLOWING OPERATION.—If the operation is of such a nature that both ovaries are entirely removed, the resulting amenorrhœa is incurable.

Amenorrhœa following the shock of any operation may be permanent in spite of all treatment. If of a temporary nature, menstruation will recur as the patient gets better, and no special treatment is required.

AMENORRHŒA DUE TO CONSTITUTIONAL CONDITIONS.—The treatment in these cases must be directed towards the disease, when, if it is capable of amelioration or cure, the periods will return in due course.

AMENORRHŒA OF OBSCURE OR NERVOUS ORIGIN.—The treatment of amenorrhœa in those women whose menstruation has started normally and then without any apparent reason ceased is often very unsatisfactory. If they appear to be in perfect health no treatment is required, but when this is not the case such patients are at times relieved by one or other of the remedies already mentioned ; in addition, corpus luteum extract, thyroid extract, and hypophyseal extract can be tried. Often, however, the periods never return, and the patient passes through a premature menopause. The amenorrhœa due to some shock, the fear of pregnancy in the unmarried or newly married, or the desire for pregnancy (pseudocyesis) does not require any treatment.

Amenorrhœa with Physical Signs of Abnormality of the Pelvic Organs.—CONGENITAL DEFECT.—If the uterus or ovaries are absent the amenorrhœa is incurable. If these organs are imperfectly developed the amenorrhœa may be incurable, but in some cases the administration of ovarian extract has proved successful, and cures have been claimed with electrical treatment.

If the amenorrhœa is apparent only, that is, the woman is menstruating but the menstrual fluid is prevented from escaping by an obstruction at the hymen, vagina, or cervix,—the treatment will vary with the variety of obstruction, as follows :—

"*Imperforate Hymen.*"—Under very strict aseptic precautions the septum is incised and the menstrual fluid allowed to escape without any further assistance, such as pressure or douching. It is important that the

pads directly they are soiled should be replaced by clean ones, so that the risk of sepsis is reduced to a minimum.

Absence of the Vagina in part or whole.—The treatment here will vary according to how much of the vagina is absent ; if only one inch or so, the solid portion can be dissected up, and there will be a fair chance of keeping it patent. When the whole of the vagina is absent a channel can be dissected up to the cervix, but as a method of treatment it holds out a very remote prospect of success, the channel invariably closing again. In such cases it may be best to remove the uterus (but see pp. 313, 314).

Obviously, before performing any of these operations, the surgeon must satisfy himself that the patient is really menstruating, as in these cases of congenital absence of a portion or the whole of the vagina the uterus and ovaries are often functionless.

ATRESIA OF THE CERVICAL CANAL.—These cases, whether of congenital or acquired origin, are treated by boring a hole through the cervix into the cavity of the uterus and then inserting a hollow stem pessary to keep the canal patent. Removal of the uterus may be necessary in some cases.

AMENORRHŒA WITH ENLARGEMENT OF THE UTERUS.—When due to hæmatometra or pyometra the condition has to be treated either by relief of the obstruction and drainage or by hysterectomy.

With pregnancy as a cause treatment is not indicated. The practitioner must be on his guard in such cases, as it is not always easy to diagnose pregnancy in its early stages, and the woman may endeavour, for ulterior purposes, to mislead him.

AMENORRHŒA ASSOCIATED WITH AN EXTRA-UTERINE TUMOUR.— Ovarian tumours will require to be removed. Inflammatory disease of the uterine tubes or ovaries may require similar treatment (see p. 334).

The treatment of extra-uterine gestation is discussed on page 344.

TREATMENT OF UTERINE HÆMORRHAGE.

The treatment of hæmorrhage from the uterus will depend upon whether the bleeding is periodic, irregular, or continuous, and whether in either case gross physical signs are absent or present.

Excessive Periodic Hæmorrhage without Local Physical Signs. —If a vaginal or rectal examination has failed to disclose any gross physical signs of disease, the bleeding must be treated on general lines, by rest, diet, drugs, and, if necessary, by local treatment.

REST.—The patient must be kept in bed and free from all excitement and worry. If circumstances will permit a trained nurse should be in attendance, and at any rate the patient must not leave her bed for the purposes of micturition and defæcation.

DIET.—Alcohol in any form, unless prescribed by the medical attendant, must be strictly prohibited. In other respects no special directions are necessary for the dieting of the patient.

DRUGS.—The drugs employed for the treatment of genital hæmorrhage are fourfold in nature. Firstly, sedatives may in certain cases be appropriately prescribed to quieten the action of the heart. For this purpose opium in one of its many forms is the best drug. Secondly, in many cases the hæmorrhage is associated with pelvic congestion, which is best treated by a course of saline aperients. Thirdly, by increasing the coagulability of the blood the hæmorrhage may be arrested, and this can be effected by the administration of calcium lactate. Fourthly, there are certain drugs which have a distinct action on the uterus or its nerves, such as ergot, hydrastis canadensis, hamamelis, styptol, stypticin, cannabin, hydrastinine, and hypophyseal extract. A few words on each of these is necessary.

Ergot.—Of the drugs just enumerated, ergot is the most useful one we have for controlling uterine hæmorrhage. It may be given as ergotin either in a pill, or hypodermically, but is best prescribed in an acid medium combined with strychnine, as follows :—

R	Ext. Ergot. Liq.,	℥ss.
	Liq. Strychnin Hyd.,	♏v.
	Acidi. Hydrochlor. dil.	♏x.
	Aq. Chloroformi,	ad ℥i.

Sig.—This dose three times a day.

R	Ext. Ergotæ Liq.,	30 c c.
	Liq Strychnin Hyd.,	5 c.c.
	Acidi Hydrochlor dil.	10 c.c.
	Aq. Chloroformi,	ad 480 c.c.
	Fiat Mistura.	

Sig.—Two tablespoonfuls three times a day

In an emergency, when the bleeding is very severe, a hypodermic injection will act most quickly, but this is an unsuitable form of medication for routine treatment, and it is found that the liquid preparations of ergot are more powerful and satisfactory in their action than the solid. In whatever form ergot is prescribed it is most important that the drug should be fresh.

Ergot, by producing arterial contraction, increases the resistance to the heart, and therefore should not be given for any lengthy period, more especially in a patient who has been losing for a long while, as in these cases the heart muscle may be degenerated from the prolonged anæmia. There is no fear of poisoning a patient with the administration of medicinal doses of ergot.

Ernutine, a combination of ergotoxine, tyramine, and ergamine, the active principles of ergot, may be given as a mixture or hypodermically in 5 to 10 minim doses.

Hydrastis Canadensis and Hamamelis.—These drugs are sometimes successful when ergot fails to act, and they have the advantage of not causing uterine contractions, which in some patients are so marked that

they are unable to take ergot. These drugs may be given as the liquid extract in 15 and 30 minim doses respectively, and hydrastis may be given as a pill in the form hydrochloride of hydrastinine gr. ¼ to gr. 1.

"*Styptol*" *and* "*Stypticin*" (*Cotarnin Phthalate, Cotarnin Hydrochloride*).—These drugs are not only hæmostatic but also sedative in their action, and are thus particularly indicated when the bleeding is associated with pelvic pain. They do not cause contraction of the uterus, and are sometimes successfully employed in those cases in which ergot has failed to act. These drugs are given in a solid form, the dose being gr. ¾.

"*Lodal.*"—This drug may be tried as an alternative to the salts of cotarnin in doses of 1 grain.

Hypophyseal Extract.—This may be given in the solid form, gr. 2 for a dose, or it can be given hypodermically. This drug can be used as an alternative to and in the same circumstances as ergot.

Calcium Lactate.—Blair Bell advises that this drug should always be recently prepared by the action of lactic acid on precipitated calcium carbonate as follows :—

℞   Acidi Lactici,   gr. xxxvii.
     Calcii Carbonatis, gr. ix.
     Chloroformi,   ♏ i.
     Aquam,   ad ℥i.

Sig.—This dose every night or every other night.

℞   Acidi Lactici,   37 grms.
     Calcii Carbonatis,   9 grms.
     Chloroformi,   1 c.c.
     Aquam,   ad 480 c.c.
     Fiat Mistura.

Sig.—Two tablespoonfuls to be taken every night or every other night.

This drug increases the coagulability of the blood, and is indicated especially in those cases of uterine hæmorrhage in which the uterus itself is apparently healthy.

Cannabin.—The drug may be given in doses of half to one grain, and is usually prescribed in combination with some of the drugs already mentioned.

Combination of Drugs.—In some cases it is found that a better result is obtained if some of the drugs already mentioned are combined, such as—

℞   Ext. Ergot. Liq.,   ℥ss.
     Exr. Hamamelidis Liq., ♏ xv.
     Ext. Hydrastis Liq., ♏ xv.
     Acid Sulph. dil.   ♏ ii.
     Aquam,   ad ℥i

Sig. (for either).—This dose three times a day after meals.

℞   Ergotini,   gr. i.
     Cannabin Tannatis, gr. ½.
     Hydrastin Hydrochlor., gr. ¼.
     Cotarnin Hydrochlor., gr. ½.
     Fiat Pil.

℞   Ext. Ergot. Liq.,   30 c.c.
     Ext. Hamamelidis Liq., 15 c.c.
     Ext. Hydrastis Liq., 15 c.c.
     Acid Sulph. dil.   2 c.c.
     Aquam,   ad 480 c.c.

Sig.—Two tablespoonfuls three times a day after meals.

℞   Ergotin,   1 grm.
     Cannabin Tannatis, 0·5 grm.
     Hydrastin Hydrochlor., 0·25 grm.
     Cotarnin Hydrochlor., 0·25 grm.
     Fiat Pilulæ.
     Divide into 15 pills.

Sig.—One pill three times a day after meals.

LOCAL TREATMENT.—*Hot Douches.*—A hot vaginal douche acts by stimulating the uterus to contract. The water should be at a temperature of 115°. The douche may be given, if necessary, every four hours, and in amount several quarts, but great care should be taken not to scald the vagina.

Plugging the Vagina and Uterus.—For this method of treatment to be of any service it must be done efficiently. The bladder is first emptied, a hot vaginal douche is then given, after which the sterilized packing is inserted into the vagina, and this canal is packed tightly from above downwards. The plug is kept in place by a pad and T bandage. If the cervical canal is sufficiently dilated the uterus can be plugged first.

The method is only advisable when the bleeding is so great that it must be immediately stopped. The plugging should not be left *in situ* for longer than forty-eight hours, and usually for not more than twenty-four hours.

IRRADIATION.—X-rays act by causing atrophy of the secreting cells of the ovary and bring about a premature menopause. The method therefore is equivalent to a " bloodless " castration and has the same drawback as double oophorectomy when employed to check uterine hæmorrhage, namely, that it sacrifices healthy organs for the sake of one diseased. For further information on this subject the reader is referred to p. 396.

CURETTAGE.—As a means of stopping hæmorrhage curettage has well-marked limitations. It is contra-indicated in cases of fibroids, adenomyoma, and fibrosis of the uterus. It is of distinct service in cases of endometritis, especially in that type known as hypertrophic endometritis. In general it is more likely to succeed if the uterus is soft than if it is hard. Following the curettage the walls of the uterus may be swabbed with iodized phenol or even nitric acid ; the latter has proved most useful in the hands of one of us, but requires being done very carefully or the resulting destruction of tissue may lead to atresia of the cervix.

HYSTEROTOMY.—In obscure cases the uterus after being exposed through an abdominal incision can be incised and its cavity inspected. By such means polypi or small submucous fibroids will be discovered whose detection would have been impossible by any other means. Curettage of the endometrium can be very efficiently performed through an incision in the uterus.

UTRICULOPLASTY.—When hysterotomy reveals no cause for the hæmorrhage, and reasons exist which make the removal of the uterus particularly undesirable, a wedge-shaped portion of the organ may be removed so as to lessen its size and reduce the " menstrual area."

HYSTERECTOMY.—In certain cases, notably in those in which the

condition called " fibrosis " exists, nothing short of removing the uterus avails to stop the excessive monthly loss (see p. 339).

Irregular Hæmorrhage without Local Physical Signs.—The treatment will depend upon such diagnosis as is able to be made. When the irregular hæmorrhage is judged to be " menstrual " in character, and no serious lesion of the uterus is apprehended, the therapeutic measures just described are applicable.

When, however, the bleeding appears to have no " menstrual " relation, as, for instance, in women past the menopause, operative measures are most strongly indicated, for in such it is highly likely that some definite pathological state is present.

The operation will in the first instance be exploratory in character, the cervix being dilated so that the condition of the interior of the uterus can be investigated.

The nature of the case having thus been made clear, the surgeon can proceed at once to carry out the measures proper to it.

Continuous Hæmorrhage without Local Physical Signs.—Continuous bleeding from the uterus argues a definite pathological state, and all such cases should therefore be subjected at once to operative measures. This is the more indicated when no local physical signs pointing to the nature of the lesion are apparent, for the resort to surgery has then a double objective—the making of a diagnosis and the cure of the disease.

We may reiterate here with all emphasis possible the danger of treating cases of continued uterine hæmorrhage by drugs in the absence of accurate diagnosis. Every year we see a considerable number of cases of malignant disease of the uterus whose chances of salvation have been allowed to slip away in this manner.

Hæmorrhage with Physical Signs of Local Abnormality.—In the treatment of those cases, in which uterine hæmorrhage is accompanied by gross physical signs of disease, the reader is referred to the treatment of the individual diseases.

TREATMENT OF VAGINAL DISCHARGE.

The causative treatment of vaginal discharge obviously depends upon its source and the condition giving rise to it.

The treatment of those conditions will be found described under their respective headings, and to them the reader is referred.

Leucorrhœa or " the whites " are terms loosely used by women, and even medical men, to describe any discharge flowing from the vagina that is of a whitish colour. If the word leucorrhœa is used at all it should be limited to a mucous discharge originating in the cervix. Such a discharge

is produced by the mucous cervical glands, which, either on account of inflammatory congestion or from sheer excess of function, are secreting more than normal.

The general treatment of vaginal discharges consists in douching the vagina. This proceeding can obviously only have a direct curative effect when the discharge originates from that canal itself. In all other conditions its action is only that of washing away the discharge that has accumulated there, preventing secondary infection of the vagina by infective material discharged into it from some outside source, minimizing the chance of a non-infected discharge from an outside source becoming infected by vaginal organisms, and, lastly, if the douche be hot, aiding to some small extent the resolution of any inflammatory focus near enough to be affected by it. A large number of solutions are used for douching. The following is a classified list that will be found useful :—

ANTISEPTIC DOUCHES.—*Perchloride of Mercury, Biniodide of Mercury.* —These should be used at a strength of from 1 in 2000 to 1 in 4000. The biniodide is the best. Their drawback is that if long continued these chemicals in some persons set up a degree of irritant vaginitis, whilst very exceptionally, as the result of a personal idiosyncrasy, mercurial poisoning may be caused.

Iodine.—Two drachms of the tincture to a pint is the proper strength. This is a very useful douche, being efficacious and without the drawbacks attaching to the mercurial solutions.

Lysol.—One drachm to the quart is the right strength—any strength greater than this tends to be irritant. It is a useful and efficacious douche, but the smell is obnoxious to some persons.

Chlorine.—Solutions containing chlorine may be used to douche the vagina. " Eusol " and Dakin's solution are the two best known. They are exceedingly efficient and but very slightly irritant.

Flavine.—A 1 in 1000 solution makes a very excellent antiseptic douche, which we have used with much success in cases of gonorrhœa.

DEODORANT DOUCHES.—*Peroxide of Hydrogen.*—This is the best douche to use when sloughing and stinking conditions of the vagina or vaginal cervix have to be dealt with. The strength should be five volumes.

" *Sanitas.*"—For foul discharges " Crude Sanitas " in the strength of 4 drachms to a quart is the most generally useful douche. Its odour is not unpleasant, and it has no toxic or irritant effects.

ASTRINGENT DOUCHES.—*Tannic Acid, Gallic Acid.*—Both these substances may be used in solutions the strength of 2 drachms to the quart (16 gms. to 1200 c.c.). They are used in case of leucorrhœa accompanied by chronic cervicitis. They coagulate the mucous discharge and bring it away in lumps, a proceeding impressive to the patient, and they have a slight beneficial action on cervical erosion if it be present.

Sulphate of Zinc, Alum.—These have a stronger astringent action than the two last-named. The strength of the solution in either case is 2 drachms to the quart.

The Silver Salts.—For obstinate cases of chronic purulent vaginitis the use of one of the organic salts of silver is often beneficial. They are best applied directly to the vaginal mucosa by a brush or swab in fairly strong solution. Protargol 5 to 10 per cent. is the best preparation.

SEDATIVE DOUCHES.—Normal saline solution may be used, but borax (strength, 4 drachms to a quart, 32 gms. to 1200 c.c.) is better in conditions associated with soreness or itching.

TREATMENT OF ABDOMINO-PELVIC PAIN.

Two classes of cases have to be considered :—

    1. Those *without* local physical signs of disease or abnormality.

    2. Those *with* local physical signs of disease or abnormality.

Cases without Physical Signs.—In dealing with cases of abdomino-pelvic pain of obscure origin, the practitioner has first to consider the likelihood or otherwise of some gross local condition existing in spite of his inability to find it.

Secondly, he must consider the degree of disability which the patient's symptoms occasion.

In estimating the possibility of his examination being at fault, he must take into account his personal expertness and experience in such cases, the ease with which it was possible to make the examination, and the question as to whether, in the patient's past history, there is anything to suggest that a gross physical cause for the symptoms is likely to be present.

The relation borne by the patient's general health to her complaints is important. Pain in its ordinary forms, if long continued, produces a marked effect on the general nutrition and well-being of the individual. When, therefore, a patient complaining of " agony " or " dreadful pain " of several years' duration has a robust and healthy appearance, a gross physical lesion as the entire cause for the pain is very improbable.

The degree to which the pain disables the patient is also of much importance in deciding the course along which treatment is to be pursued. For instance, when a working woman is prevented from following her employment the indication for active measures, even to undertaking exploratory cœliotomy, is much greater than in the case of a leisured person, whose sole disability is that she is unable to take a long walk, play two rounds of golf, and so on.

DRUG TREATMENT.—A number of drugs are at the service of the practitioner for use in cases of pelvic pain without physical signs, the selection depending upon the peculiarities presented by each particular patient.

As a rule it is a good thing to begin with purgatives, for many women go about with an habitually over-loaded colon, although the bowels are open every day. Ordinary "white mixture," three times a day, is as good as anything to begin with, later, when one is assured that the colon is well emptied, the following may be used instead :—

℞	Ext. Cascaræ Sag. Liq.,	ʒi.	℞	Ext. Cascaræ Sag. Liq.,	60 c.c.
	Magnesii Sulphatis,	ʒi.		Magnesii Sulphatis,	60 grms.
	Tinct. Hyoscyami,	ʒss.		Tinct. Hyoscyami,	30 c.c.
	Aq. Menth. Pip.,	ad ʒi.		Aq. Menth. Pip.,	ad 480 c c.
Sig.—This dose at night as required.			*Sig.*—Two tablespoonfuls at night as required.		

This is the most generally efficient purgative that we know. Its drawback is its unpleasant taste. This may be modified by substituting one of the more palatable proprietary preparations of cascara for the pharmacopœal liquid extract, or by giving it in capsules in the dry form, thus :—

℞	Ext. Cascaræ Pulv.,	gr. 1¼.	℞	Ext. Cascaræ Sagrad. Sicci,	1·25 grm.
	Magnesii Sulphatis,	gr. xv.		Magnesii Sulphatis,	15 grms.
	Ext. Hyoscyami,	gr. ½.		Ext. Hyoscyami,	0·5 grm.
	Olei Menthæ Pip.,	ℳ ¼.		Olei Menthæ Pip.,	0 25 c.c.
	Fiat cachet i.		*Mix*—Divide into fifteen capsules.		
Sig.—Two to four capsules to be taken at night.			*Sig.*—Two to four cachets to be taken at night.		

When flatulence is believed to play some part in the trouble, one of the two following prescriptions are serviceable :—

℞	Potassii Bicarb.,	gr. x.	℞	Potassii Bicarb.,	10 grms.
	Tinct. Zingiberis,	ℳ x.		Tinct. Zingiberis,	10 c.c.
	Spirit Chloroformi,	ℳ x.		Spirit Chloroformi,	10 c.c.
	Infus. Rhei,	ℳ xxx.		Infus. Rhei,	30 c.c.
	Infus. Gentianæ,	ad ʒi.		Infus. Gentianæ,	480 c.c.
Sig.—This dose three times a day after meals.			*Sig.*—Two tablespoonfuls to be taken three times a day after meals.		

℞	Ext. Aloes,	gr. i.	℞	Ext. Aloes,	1 grm.
	Tinct. Capsici,	ℳ v.		Tinct. Capsici,	5 c.c.
	Sp. Menth. Pip.,	ℳ iii.		Sp. Menth. Pip.,	3 c.c.
	Aquam,	ad ʒi.		Aquam,	ad 480 c.c.
Sig.—This dose three times a day.			*Sig.*—Two tablespoonfuls three times a day.		

The following prescription is also excellent, especially if gastric symptoms are present as well :—

℞	Bismuthi Salicylatis,	gr. x.	℞	Bismuthi Salicylatis,	10 grms.
	Sodii Salicylatis,	gr. x.		Sodii Salicylatis,	10 grms.
	Sp. Chloroformi,	ℳ x.		Sp. Chloroformi,	10 c.c.
	Aq. Menth. Pip.,	ad. ʒi.		Aq. Menth. Pip.,	ad 480 c.c.
Sig.—This dose three times a day.			*Sig.*—Two tablespoonfuls three times a day.		

In cases with evident neurosis sedative drugs are indicated, the bromides in particular. The following is a combination of proved usefulness in these cases :—

℞	Pot. Brom.,	gr. xx.	℞	Pot. Brom.,	20 grms.
	Sp. Chloroformi,	℥ x.		Sp. Chloroformi,	10 c.c.
	Infus. Cinchonæ,	ad ℥i.		Infus. Cinchonæ,	ad 480 c.c.

Sig.—Th s dose three times a day.   *Sig.*—Two tablespoonfuls three times a day.

There is a group of drugs credited with having a specific sedative action on the female generative organs to which recourse may be had when there appears to be a reasonable probability of the pain arising in them. Amongst this group may specially be enumerated—

Aletris, viburnum, bryony, cotarnin, salix nigra, caulophylium, mitchella repens, helonias, apiol, and lodal. There are many proprietary preparations of these drugs of which the practitioner has his choice.

The use of the analgesics of the " antipyrin " type is limited in cases of chronic abdomino-pelvic pain, but they may be given at the height of exacerbations, if such occur. Aceto-salicylic acid (aspirin) is the most generally useful, but some cases react to one and some to another.

When hysteria plays a part in the case, valerian and the valerianates are indicated. In gross cases of this sort the old Mistura Valerianæ Asafœtida sometimes does well.

A great number of these patients are out of health generally, quite apart from their local complaints. To such the administration of ferruginous tonics is always beneficial. The best results are obtained with the milder preparations of iron, as thus—

℞	Ferri et Ammon. Cit.,	gr. x.	℞	Ferri et Ammon. Cit.,	10 grms.
	Liq. Strychnin Hyd.,	℥ iii.		Liq. Strychnin Hyd.,	3 c.c.
	Sp. Chloroformi,	℥ x.		Sp. Chloroformi,	10 c c.
	Aquam,	ad ℥i.		Aquam,	ad 480 c.c.

Sig.—This dose three times a day.   *Sig.*—Two tablespoonfuls three times a day.

The modern glycero-phosphates, of which there are several proprietary preparations, are very useful, and lecithin may be advantageously combined with them.

When the patient is thin and debilitated, the tonics mentioned should be supplemented by cod-liver oil and malt extract.

A glass or two of a full-bodied, but not necessarily very fine burgundy taken at meals gives a fillip to the appetite. Port wine does these cases good.

COUNTER IRRITATION.—In certain forms of undiagnosable pelvic pain improvement is produced by counter irritation. It may be effected by liniments, but in most cases a blister is more efficacious. In very obstinate cases with a definite pain spot, the use of the actual cautery is strongly to be recommended.

MASSAGE.—Massage is useful under two conditions—

1. When the pain is suspected of being due to weakness of the back or abdominal muscles.

2. In states of intestinal stasis associated with flatulence and relaxation of the abdominal parietes.

It may also be used as an adjunct to other treatment when general muscular debility and ill-being complicates the leading symptom.

MECHANICAL SUPPORTS.—Many of these cases derive great benefit from some form of mechanical support. In a certain proportion of patients, however, pressure over the pain spot would not be tolerated. Before, therefore, ordering a mechanical appliance, it is often wise to contrive some temporary expedient to test the efficacy of pressure, such as a well-fitting many-tailed binder, strips of adhesive plaster, or a small pad temporarily fixed on with the latter.

Abdominal belts are useful in ilio-pelvic pain associated with pendulous abdomen, but they require very careful planning so that the pressure shall be applied from below upwards. Better than a belt is a well-fitting modern, straight-fronted corset carried low down over the pubes, which has small straps fixed on either side, uniting by a buckle in the middle line, so as to keep the busks in close approximation with the abdominal wall.

When a definite pain spot exists, over which firm but gentle pressure is alleged by the patient to give relief, a small pad, either pneumatic or stuffed with horse-hair, may be applied, either by fastening it to the inner surface of the belt or corset, or by retaining it in position by a broad strap that passes round the pelvis. The latter is particularly useful in the type of pain that centres round the sacro-iliac joint.

The Introduction of a Pessary in the Absence of Physical Signs of Uterine or Vaginal Displacement is to be utterly condemned.—A pessary is most properly used as a splint, *i.e.* a temporary appliance to support parts in normal position until they will remain so of themselves. It is also occasionally justifiably employed like an orthopædic device to permanently counteract deformity that is incurable. But to insert a piece of indiarubber or vulcanite into a normal vagina and under a normal uterus, for the cure of pain which has no relation to either, is a method of treatment not differing much from the rheumatism rings and such-like similar charms that have in all ages made appeal to the credulous minds of the ill-educated and vulgar.

ELECTRO-THERAPEUTICS.—The use of electricity is chiefly indicated in cases with marked neurosis. Its action is no doubt in many instances due to suggestion. In others it has the effect of a counter irritant. The modern device of " diathermy," whereby a stream of heat is carried into the tissues by an electric current, should prove very useful in certain cases.

OPERATIVE MEASURES.—There are certain circumstances when an exploratory cœliotomy is fully justified in view of the very finite limitations of diagnosis that pertain to ordinary examinational methods.

These circumstances may be thus stated—

1. When the pain has existed a long time and has defied every other method of treatment.
2. When it is the cause of serious disability.
3. When the patient, fully understanding its problematical chance of success, desires it as a possible means of escape from her sufferings.

In any given case very careful consideration is necessary before the practitioner should countenance or advise this last resort. Since, in most instances, the propriety of an operation depends upon the degree of disability caused by the pain, the final determination is better as a rule left to the patient and those immediately about her.

As regards the nature of the operation, this, in the first instance, is exploratory, and, as a rule, a median sub-umbilical incision should be made. Through it the uterus should first be inspected, and the appendages on each side pulled up and examined. The vermiform process should next be brought into view, particularly in cases of right ilio-pelvic pain, where the symptoms of appendicitis may be mimicked or suggested.

The colon and the small intestine should then be explored with reference to the finding of adventitious bands or adhesions; special attention should be paid in this regard to the cæcum, the lower end of the ileum, and the pelvic colon where it crosses the brim of the pelvis.

Finally, the state of the upper abdomen, and the kidneys on both sides, and the gall bladder should be investigated.

If, as a result of these examinations, some definite abnormality be discovered, this should be corrected. In the event of nothing definite being discovered, the course to be pursued must depend upon the peculiarities of the case.

In cases of pain of the ilio-pelvic variety, its seat is often ascribed to the ovary of one or both sides, and patients are not infrequently advised to have one or both of these organs removed on that account. Removal of both ovaries, or even one ovary, solely on account of pain, and in the absence of any apparent pathological change in the organs themselves, is strongly to be condemned as a rule. In the majority of the cases the pain is probably not located there at all but in the ovario-pelvic ligament and the visceral nerve contained within it.

In those instances in which periodic exacerbations just at or before the menstrual epoch are known to occur, or when the point of maximum pain and tenderness can be definitely located in the ovary, this organ may be removed from its normal site and *grafted* in the abdominal wall.

This method of dealing with cases of true ovarian pain has the advantage of not immediately depriving the patient of the internal secretion of the ovary, whilst by severing that organ from all its nervous connections it effects the desired result. The technique is simple, the ovary being cut up into thin slices which are deposited between the parietal peritoneum and the posterior rectus sheath. Experience seems to show, however, that the implanted ovarian tissue presently undergoes degeneration or absorption.

When the pain is judged to arise in the ovario-pelvic ligament this structure may be divided or exsected.

In some instances there is reason to suppose that the pain is due to abnormal traction on these ligaments by a heavy uterus either slightly retroverted or in acute anteflexion. In such the uterus may be ventro-fixed with or without division of the ligaments in question so as to abrogate their suspensory function. In cases in which the uterus appears abnormally low in the pelvis, ventro-fixation or shortening the round ligament may appear advisable.

If the ovaries are found prolapsed, the ovario-uterine ligaments should be shortened, and this may be combined with ventro-fixation of the uterus if necessary.

Such then are the surgical measures that can be adopted.

The question at once arises, what is the likelihood of their proving successful ? This is difficult to answer, for the prognosis of each case is peculiar to itself. In general it may be said that a considerable proportion are decidedly improved, a lesser number actually cured, whilst the remainder either remain *in statu quo* or else, after temporary improvement, relapse again.

The temperament of many of these patients is typically neurasthenic.

Cases with Physical Signs.—Cases of abdomino-pelvic pain, which present physical signs of disease or abnormality sufficient to account for their symptoms, are a much easier class to treat, because there is something definite to go upon.

In such the important question to be decided is whether operative measures are indicated or not. The answer must depend upon the nature of the condition found.

In general it may be said that when a gross physical lesion is present, the most direct and rational course is to set it right by an operation.

There are, however, certain exceptions to this rule, and, moreover, patients sometimes refuse to undergo an operation, although it is obviously the proper treatment. In either event, some means of alleviating the pain must be employed.

If this is acute, the narcotics, opium, morphia, heroin, chloral, " bromidia," etc., may be indicated, but these should be used with much

caution lest the symptoms be masked. Warm fomentations to the abdomen, and hot vaginal douches, are usefully employed in most conditions.

When narcotics are contra-indicated, one of the analgesic drugs may be given instead. Aspirin in 10-grain doses is the most generally efficacious of these.

For the more chronic cases, narcotics are unsuitable and very undesirable, and reliance must be placed in local fomentations and douches and the internal administration of aspirin, or some similar drug, and the bromides. The use of vaginal tampons soaked in glycerine or glycerine and ichthyol or glycerine pessaries is advocated by many as a means of relieving congestive states of the pelvic organs.

Finally, in all cases, rest in bed materially diminishes the pain, and in many is absolutely imperative from other points as well.

The " Acute Abdomen."—The treatment of those conditions which collectively come under the head of the " acute abdomen " is initially the same in all cases, namely, *immediate abdominal section*, nor should the practitioner be led on any account to deviate from this rule. In particular, he should be on his guard against the two common sources of error in the treatment of these disasters. The first of these is the deceiving " period of reaction " that often succeeds the initial shock of the catastrophe (see p. 77). The second is the fallacious appearance of improvement wrought by the use of morphia. The first is most likely to occur when the medical man does not arrive at the case until some time after the onset of the symptoms when the patient's general condition may seem to belie the alleged severity of the attack. As has already been pointed out, the pulse often remains rapid throughout the period of reaction. When, therefore, this symptom is present, especially when conjoined with local or general abdominal tenderness, the probability of some serious lesion is very great.

The second source of error is still more important, for the extent to which morphia can abolish the symptoms in some cases has to be seen to be believed. Thus we have the experience of cases of advanced general peritonitis so free of any pain or abdominal tenderness that active movement, either sitting or standing, was unaccompanied by any distress, while the mental condition owing to the use of the drug was one of extreme alertness, vigour, and cheerfulness.

When, however, a working diagnosis has been made, and an operation decided upon, morphia is most usefully employed pending its performance. This is particularly the case when the patient has to be moved some distance, or when some considerable time must elapse before the operation can be performed. It may then be used freely in doses of a quarter or even a third of a grain, repeated if necessary.

When the practitioner has to relinquish the charge of the patient, and send her to an hospital some distance off, he should always remember to inform the hospital officer as to the amount of morphia which he has found it necessary to administer, together with a definite account of the onset of the symptoms and the patient's condition prior to the use of the narcotic, for otherwise the surgeon, under whose charge she comes, will be handicapped in his endeavour to decide the best course of treatment. It is, of course, desirable not to have to move a patient the subject of an " acute abdomen," but to operate upon her where she lies. This is not always possible because of her environment, but the practitioner, in weighing the drawbacks of unfavourable or inconvenient surroundings against those of a journey of more or less length, may remember that the success of an operation much more depends upon the expertness of the surgeon than upon the circumstances amidst which he performs it. It is a fact that emergency operations, if carried out early, do remarkably well, whilst, on the other hand, the chances of a patient who has been subjected to the trials of a long journey prior to coming into the operating theatre are very definitely diminished.

The operation in all cases is, in the first instance, exploratory, and the surgeon must choose the position of his incision according to where the lesion is most likely to be situated. In cases in which this is quite indefinite, the middle line just below the umbilicus should be selected.

THE TREATMENT OF MENSTRUAL PAIN.

The Virginal Type (see page 98).—This, the commonest type of monthly pain, may be treated either by drugs or by operation.

DRUG TREATMENT.—In any case the first point to ensure is that the bowels are regularly opened, for most of the patients are young women who are notoriously constipated as a rule. For this purpose the ordinary " white mixture," two or three times a day, is well suited.

Of the drugs whose object is directly to alleviate the pain, a large variety are at the service of the practitioner. One of the following may be selected to begin with : phenacetin, antipyrin, phenalgin, ammonal, antitoxin, antikamnia, and aspirin. The dosage varies from 5 to 10 grains, given every three or four hours, or, in bad cases, more often, until relief is experienced. The practitioner will find that what relieves the pain in one case often fails to have the same effect in another, so that which is the best to use in any individual patient is largely a matter of trial.

All these analgesic drugs tend to lose their effect after the patient has become habituated to them.

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Other drugs that may be tried are : guaiacum, aletris, bryony, viburnum, and apiol.

When the patient's general health is poor, tonics are indicated, and the bromides should be administered if neurosis is obviously present.

Opium, and especially morphia, should be sedulously avoided on account of the risk of the patient acquiring the habit. In exceptional circumstances it may be justifiable to administer a hypodermic injection, but, in general, it may be said that when the pain is of such intensity as to require this, operative measures are strongly indicated.

OPERATIVE MEASURES.—*Dilatation of the Cervix.*—When the monthly pain is of the typical virginal type, *i.e.* that it occurs during the first few hours of the flow, is centrally situated in the lower abdomen, and is of a grinding, gnawing character, dilatation of the cervix is by far the most likely method of cure short of removing the uterus.

In about 90 per cent. of properly selected cases the pain is either altogether or partially relieved.

On the other hand, the more the type of pain deviates from that described, the less the chance of this measure proving successful. Thus, if the pain be long continued, perhaps lasting for several days, the outlook is not good, and similarly if its onset is not on the first but on some other day, or if it be experienced in the back or to one or other side, instead of the middle line.

In making up his mind whether to advise dilatation of the cervix in any given case, the practitioner must take these important facts into consideration, and, further, he will have to take into account the severity of the pain, the degree of disability it causes, the extent to which it is mitigated by drugs, and the likelihood of future pregnancy. This last is important, because dysmenorrhœa of the virginal type is nearly always cured by child-bearing. On the other hand, it is to be borne in mind that when the pain is severe, sterility is common. Thus there may be a double object in the operation.

The success of dilatation of the cervix is likely to be greater the earlier it is performed, for when a patient has suffered since adolescence until over 30 years of age, the prospect of curing her by this means is much diminished.

Finally, the conformation and condition of the uterus as ascertained by vaginal or rectal examination must be considered. In a good number of cases of dysmenorrhœa of the virginal type acute anteflexion is found associated with a vaginal cervix and external os more or less undersized. At the time when this type of dysmenorrhœa was attributed to obstruction to the outflow of the menstrual discharge the conformation of the uterus and cervix was held to be the cause of the obstruction.

We have already pointed out that dysmenorrhœa of the virginal type

is unlikely to be due to obstruction because the pain is not colicky (see page 99). Further, in many of the cases presenting it no abnormality of any sort can be discovered. Nevertheless, we are of opinion that when acute anteflexion and a small cervix are present the likelihood of success after dilatation is greater than in those cases in which the parts seem absolutely normal, and the former finding should therefore incline the practitioner towards operation.

Curettage.—Curettage is only indicated in cases of virginal dysmenorrhœa when evidence of cervicitis or endometritis exists.

Endometritis in virgins is uncommon, but cervicitis and cervical erosion are not at all uncommon. In the latter case the cervix alone should be scraped.

Hysterectomy.—In exceptional cases of virginal dysmenorrhœa removal of the uterus may have to be performed to relieve the patient of her intolerable monthly pain. Such a last resort should never, of course, be adopted until every other measure has been tried, and it is certain that the pain by its severity is gravely affecting the patient's health and happiness. Most of the patients requiring this drastic step are women over 30, usually childless after many years of married life. In such the loss of an organ which is deficient in its chief function is less to be deplored. The body of the uterus alone should be removed.

Oophorectomy.—Women the subject of severe monthly pain are sometimes advised to have their ovaries removed. Though there are certain uncommon types of dysmenorrhœa in which this proceeding is properly indicated, as applied to cases of the virginal type it is a reprehensible proceeding ; for though, of course, it cures the pain, it subjects the patient to a violent and early climacteric.

Hysterectomy, which just as effectually removes the pain, has no such drawback and no greater risk.

Obstructive Dysmenorrhœa (see p. 100).—Drug Treatment.—When symptoms suggesting obstruction to the outflow of the menstrual discharge are present, the scope of drug treatment is limited to the sheer relief of the pain, except in those cases due to excessive bleeding from, or clot formation in the uterus.

In such the various uterine styptics (see p. 292) may effect temporary or permanent cure.

Operative Measures.—Since obstructive dysmenorrhœa is usually the result of some gross abnormality or disease, operative treatment must be directed to the cure of this.

Dilatation of the Cervix.—Though it is no longer believed that the combination of a sharply anteflexed uterus with a small cervix is associated always or even usually with obstruction, yet in certain cases the

colicky pain indicative of such is present. When this is the case dilatation of the cervix will effect a cure.

This type of condition is commonly met with in association with the " virginal " type already described, so that the operation is doubly indicated.

When there is evidence of intra-uterine clot formation, or the passage of a menstrual cast, dilatation of the cervix by allowing of their freer passage will relieve the pain.

Curettage.—Since in many of these cases an abnormal condition of the endometrium exists, either causing intra-uterine clot formation, excessive bleeding, or the shedding of a menstrual cast, curettage has an important part in the treatment of obstructive dysmenorrhœa.

The prospects of its success depend upon the nature of the case. Thus when endometritis, especially of the hypertrophic type, is the cause of the pain, the results are good. Its effects in chronic fibrotic metritis (fibrosis uteri) are rarely lasting and often nil.

In membranous dysmenorrhœa the outlook chiefly depends on whether the condition has existed almost since the onset of menstruation, or whether it has followed on a definite attack of endometritis, gonococcal or otherwise.

In the first case curetting rarely has any permanent effect, but in the second may result in a cure.

Obstructive dysmenorrhœa due to fibroids should not be treated by curettage but by removal of the tumour.

Hysterectomy.—Removal of the uterus for obstructive dysmenorrhœa is typically indicated when the condition is due to uterine fibroids. These tumours may interfere with the outflow from the uterus both by increasing the amount of the menstrual loss and by narrowing the passage.

Certain cases of diffuse uterine fibrosis and adeno-myomata are also associated with severe monthly pain of the obstructive type, and may require similar treatment as may many very obstinate cases of membranous dysmenorrhœa.

Hysterectomy may be called for in cases of congenital non-development of certain portions of the genital tract. Thus, in absence of the vagina, producing hæmatometra, the removal of the organ is usually called for. Again, with menstrual retention in the undeveloped half of a unicornute uterus, the removal of the ill-developed horn is requisite.

Finally, obstructive dysmenorrhœa following operations on the cervix, or excessive scarring after puerperal sloughing, may necessitate hysterectomy.

Oophorectomy.—Removal of the ovaries as a cure for obstructive dysmenorrhœa is no longer carried out. As a method of treating uterine

fibroids, and incidentally the dysmenorrhœa that these tumours some-times cause, it had a certain vogue at one time.

Congestive Dysmenorrhœa.—As has already been explained, different pathological conditions underlie this type of monthly pain in different cases (p. 99).

As compared with the virginal type of dysmenorrhœa, and even to a less extent with the obstructive type, the presence of gross physical signs indicating disease or abnormality is much more constant.

Treatment, therefore, should be directed primarily to remedying that which is obviously amiss rather than to merely applying measures calculated to alleviate the pain.

Thus, if endometritis be present, curettage may be indicated, or in default of this the use of hot douches, glycerine and ichthyol tampons, and the internal administration of uterine styptics and calcium lactate.

Displacements of the uterus must be remedied. That most commonly found in these cases—retroversion—is best treated by operative means. When endometritis coexists with retroversion, as it often does, curettage alone is useless if the position of the uterus be not corrected at the same time (see p. 354).

Chronic cervicitis, erosion, myomata, or diffuse fibrosis may all be associated with this form of dysmenorrhœa, and will require their appropriate treatment. For the mere palliation of the pain the drugs mentioned on p. 305 are all available, but none of them are likely to have any permanent effect so long as the condition of the uterus remains grossly abnormal.

Congestive dysmenorrhœa is usually markedly relieved by rest and recumbency, and hot fomentations, hot douches, tamponage, and so forth, give more or less relief in certain cases.

Tubal Dysmenorrhœa.—Monthly pain arising in the uterine tubes is always due to gross disease. Its treatment, therefore, is merged in that proper for tubal disease in general (see p. 334).

Ovarian Dysmenorrhœa.—The comparative rarity of this form of monthly pain has already been pointed out (see p. 98).

When it is certain, or reasonably certain, that the pain arises in the ovary or ovaries, the first point to be decided is whether or no to operate. If gross change in or around the ovary can be made out on vaginal examination, surgical measures are clearly indicated. Their exact nature will, of course, depend upon the amount and extent of the disease. Much more difficult of decision are those cases in which nothing definite can be discovered and yet the pain from its position and nature suggests an ovarian origin. In many of these the small sclerotic type of ovary, quite useless for reproductive purposes, is present. It is, however, most important to recollect that it is just in this class of person that an element

of neurosis enters largely into the symptom-complex. Many of them indeed are typical hysterics. Further, the condition nearly always affects both ovaries, and therefore oophorectomy, if it is proposed, will have to be carried out on both sides. This type of patient, however, is peculiarly intolerant to the discomforts that follow an abrupt and premature climacteric, and therefore the practitioner should only countenance the removal of the sexual glands as a last resort and in exceptional cases.

If operative interference with the ovaries be determined on, we ourselves are of opinion that the best course to pursue in most cases would be to transplant them or portions of them into the abdominal wall (see p. 302). We may, however, reiterate here the significant fact that we know of no case in our experience in which monthly pain has continued after the removal of the uterus, and we are of opinion that in most cases of so-called ovarian dysmenorrhœa, in which no gross changes can be found in the ovaries, hysterectomy rather than oophorectomy is to be preferred.

As regards palliative measures, any of the drugs mentioned on page 305 may be tried, excepting the narcotics, the use of which is fraught with the risk of creating the drug habit. Parents and guardians should be particularly warned against administering alcohol to relieve the pain, for many a young woman has in this way been led to become a drunkard.

Counter irritation by blisters, iodine, hot applications, plasters, or even the actual cautery, is to be recommended for treatment in certain cases.

When neurosis is manifestly present, as little notice as possible should be taken of the pain ; for a morbid craving for sympathy often exists, and may be much accentuated by ill-advised coddling.

Monthly Pain in Situations other than the Genital Organs.—It has already been stated that most forms of pain, and in whatever site, tend to be worse at the menstrual epoch.

The treatment of such pain is not within the scope of this work, excepting menstrual headache, which is so commonly met with in gynæcological practice as to be legitimately included. The practitioner will frequently be consulted whether there is any connection between severe monthly headaches and pelvic disease, and whether, in the event of such disease being present, its cure will bring relief from the headaches.

In general, it may be stated that there is no direct relation between these headaches and disease or abnormality of the sexual organs, and that in fact in most of the cases of headache the pelvic examination reveals nothing.

When pelvic trouble does coexist, its relation to the pain is simply

this, that any condition acting adversely on the general health will tend to accentuate the headache habit.

In deciding the best course of treatment the type of the headache must be considered. True migraines, or headaches that approximate to this type, are almost certainly toxic in origin, whilst vertical, and still more occipital, headache is often hysterical.

If toxic absorption be considered the cause, purgatives are indicated, with a regimen calculated to minimize the absorption. Thus the patient should take her largest meal in the middle of the day, and lie down for an hour or two afterwards. Water should be drunk in large quantities, either simply or as milk and water, half a pint of each mixed, three times a day. A small dose of calomel once a week is usually beneficial. Just before the period commences it is often useful to administer one of the analgesic drugs combined with the bromides, thus :—

R	Ammonii Bromidi,	gr. x.	R	Ammonii Bromidi,	10 grms.
	Phenalgin,	gr. x.		Phenalgin,	10 grms.
	Mix.			Divide into fifteen parts.	
	Sig.—To be taken in a cachet as			*Sig.*—One to be taken in a cachet as	
	directed.			directed.	

One capsule should be given three times a day throughout the period, providing it proves successful in preventing the pain.

For the headaches themselves there are a great many drugs that can be tried—all those mentioned on page 305 amongst the number. Most of the sufferers from this very distressing disorder have sampled many of them in their search for relief.

Gelsemium is useful in cases in which the character of the pain suggests supra-orbital neuralgia. Antipyrin is the most efficacious in migraine, especially if this is of the " sthenic " type, with flushing of the face and a strong, full pulse. Aspirin is excellent in all forms of headache not due to pure neurosis. For these the bromides and the valerianates are better suited.

Intermenstrual Pain.—Cases of " middle pain " may, in the first instance, be treated by analgesic and locally applied sedatives such as douches, tamponage, and so forth.

In our experience, however, these measures are unlikely to succeed, probably because in most cases a definite tubal lesion is present, though, as has been pointed out, this is often not detectable by ordinary examinational methods.

When, then, the pain is obstinate and definitely interfering with the patient's well-being, the abdomen should be opened. In most cases the tube on the side of the pain will be found occluded at its abdominal end and will require removal.

THE TREATMENT OF DYSPAREUNIA.

The treatment of dyspareunia will depend upon whether it has a psychical or organic origin.

Psychical Dyspareunia.—The treatment of psychical dyspareunia is unsatisfactory, and its prognosis is bad, since there are so many factors inducing such a condition with which it is impossible for the medical practitioner to cope.

The pain or difficulty in this variety of dyspareunia is invariably at the vulval orifice, and is present from the first. An examination of the adjacent structures will fail to disclose any cause, the dyspareunia being due to nervous apprehension on the part of the bride, to an utter ignorance of the nature of coitus or to rough usage on the part of the husband. As a result of one or other of these factors a painful contraction of the levatores ani results, which prevents proper penetration. Such a condition may be successfully treated by the administration of bromides to lower the nervous tension of the woman, by a counsel of moderation or even of cessation for some little time of the function, and by an explanation, if it is thought necessary, of the proper method to perform the act ; for it has happened to us on more than one occasion to be consulted for psychical dyspareunia which had its origin in the complete ignorance of the bridegroom or bride or both. No woman should be allowed to marry without having been enlightened on this subject by her mother or nearest female relative. We have known cases in which such ignorance has been the cause of such fright or disgust that the marriage was never consummated, and the parties separated.

If the simple remedies already mentioned are insufficient, the sensitiveness of the vaginal orifice may be decreased by the application, a few minutes before coition is attempted, of a little cocain ointment 5 per cent.

Failing this, the levatores ani may be trained to toleration by the insertion of Sims' glass vaginal rests, which may be worn for several hours at a time, commencing with the smallest size and gradually leading up to the largest size, which is considerably larger than a normal penis.

If this treatment fails, the vaginal orifice will have to be enlarged permanently. This can sometimes be effected by stretching the vaginal orifice under anæsthesia ; but the best course to pursue is to perform a small plastic operation in which the perineum is incised by a vertical cut, and the wound thus made covered over with vaginal mucous membrane.

If this operation fails to effect a cure, the prognosis must be regarded as very bad ; but cures have been effected occasionally through the medium of hypnotism or suggestion, and very rarely a prolonged separation has been successful.

In cases of psychical dyspareunia sexual feeling is usually absent altogether. From time to time various drugs are brought to the notice of the profession which are stated to be reliably aphrodisiacal in nature. Of these Yohimbin and Damiana are best known. The claims of the manufacturers of these drugs are based on the experience gained with impotent stallions and bulls, and apparently in such cases the results have not infrequently been entirely satisfactory. There is, however, no definite knowledge of the effect of these drugs on mankind. We have tried them on several women who have consulted us for absence of sexual feeling, and although in one case Yohimbin did appear to have the desired effect, the rest reported its utter failure.

Apparent psychical dyspareunia may have an organic origin. In such cases as these the hymen is often found to be nearly intact, red and irritable-looking from a slight degree of local inflammation starting in the slight lacerations caused by attempted coitus.

Rest of the part for a day or two, with the use afterwards of a little cocain ointment, may suffice to effect a cure ; if not, then the condition should be treated as described under organic dyspareunia.

Organic Dyspareunia.—PAIN OR DIFFICULTY AT THE VAGINAL ORIFICE.—The commonest cause of dyspareunia is due to a lacerated hymen which has become inflamed. This complication is most often associated with a too frequent or vigorous coitus, or marked disproportion between the contracting parties.

Such a condition may be cured by rest, moderation, and cocain ointment, but the best treatment is to excise the hymen under an anæsthetic. If the hymen is so rigid or the orifice is so small that penetration is impossible, it should be divided in several places with scissors or forcibly lacerated with the fingers under an anæsthetic, the parts being kept at rest for a few days afterwards to allow of proper healing to take place. If the hymen is imperforate, it should be resected.

If the vulva or vagina is inflamed from vulvitis, vaginitis, or Bartholin's abscess, these conditions must be treated as indicated on pages 377 and 389.

An anal fissure which at times causes vaginismus should be divided with a scalpel or stretched.

The remnants of the hymen after childbirth (carunculæ myrtiformes) being inflamed should be excised.

An urethral caruncle should be excised and the base cauterized.

At times the vaginal orifice is too small to receive the penis, when coitus is impossible, not necessarily from any pain connected therewith, but purely from the disproportion. Such diminution in size may be of congenital origin, may be due to atrophy associated with the age of the woman, or with the condition known as kraurosis vulvæ. In these cases

the orifice can perhaps be enlarged by the introduction of vaginal rests ; but this whilst troublesome is not always successful, and the best treatment is to enlarge the orifice by the method described under psychical dyspareunia.

DIFFICULTY IN THE VAGINA.—Prolapse of the uterus, hypertrophic elongation of the cervix, tumours of or projecting through the cervix, or tumours of the vagina may so limit the size of the canal that for the purpose of coition it is useless. In such circumstances the condition causing the obstruction must be treated as described in other portions of this work.

The vagina may be only partially patent or wholly absent. If the lowest portion of the vagina is obstructed by a membrane (and this is the commonest cause of obstruction to find), the difficulty may be easily cured by removing the septum. If the nature of the obstruction is graver than this, for instance when the lower inch or so of the vagina is absent, a canal up to where the vagina commences can be fashioned by dissection. Such cases are not particularly satisfactory, since great difficulty is at times experienced in keeping the canal patent in spite of the use of various shaped pessaries.

If the vagina is entirely absent, two operations can be performed. In one a false vagina is fashioned by dissecting the tissue between the bladder and the rectum. This operation, which is not by any means devoid of danger, practically always ends in failure, since although at first when the surfaces have healed coition may be possible, the artificial canal contracts so readily, in spite of various instruments that have been devised to keep it patent, that penetration soon becomes impossible.

This operation having so often ended in failure, the operation devised by the American surgeon Baldwin has been practised the last few years. This consists in dissecting a passage between the bladder and rectum till the peritoneal cavity is reached. The abdomen is now opened and a piece of ileum resected, leaving its mesentery attached. The divided intestine is then anastomosed, and the isolated piece of bowel having been closed at its ends, is pulled down into the dissected canal as a loop, which after being opened is sutured to the labia.

This operation which we have carried out has now been successfully performed several times. The circumstances under which the practitioner is justified in recommending it are discussed on page 376.

PAIN ABOVE THE VAGINA.—If the dyspareunia is due to a tender backwardly displaced uterus, a quick and permanent cure can be obtained by an intra-peritoneal shortening of the round ligaments. Short of this, rest, hot douches, and glycerine tampons may remove the tenderness, coupled with the use of a pessary, a Hodge if it can be tolerated, a ring if it cannot.

Prolápse of the ovary or ovaries can be treated by a ring pessary, but far better by a suspension operation, especially if, as is usually the case, the uterus is retroverted as well.

Dyspareunia due to diseased uterine tubes and ovaries is cured by the proper treatment of these conditions.

THE TREATMENT OF STERILITY.

Absolute Sterility.—There is obviously no treatment for the causes of this condition.

Relative Sterility.—Physical Signs indicating Defects of Sexual Organs present.—*Salpingitis.*—Sterility due to salpingitis arises from the fact that the abdominal ostium or some portion of the canal is obstructed from adhesions or inflammatory thickening. The absorption of the inflammatory products by time may be awaited, aided by the therapeutic measures mentioned on pages 337–338. Most frequently such measures, as far as the sterility goes, are not successful. If the desire for maternity is urgent, the abdomen may be opened in the hope that the patency of the uterine tube may be restored, and we have successfully operated in such cases. On the other hand, this may be impossible if the tubes are gravely diseased, in which case they will have to be removed.

Fibroids of the Uterus.—A submucous fibroid or fibroid polypus certainly militates against pregnancy, and a successful result in such cases may be obtained by enucleation or excision of the fibroid.

Chronic Endometritis.—If the endometrium is chronically diseased the oosperm will not be so likely to become engrafted in the mucosa as if this structure was healthy. Treatment in such cases should therefore be directed towards diminishing the size of the uterus with rest, hot douches, and correction of any misplacement. In addition, ergot should be prescribed and the uterus curetted, when by such measures the uterus in a certain percentage of cases may be restored more or less to a healthy condition.

Cervicitis and Vaginitis.—The discharge in these conditions is likely to interfere with the well-being of the spermatozoa, and the treatment must therefore be directed towards restoring the mucous membrane to a healthy condition by curettage in the case of cervicitis and antiseptic douches and chemical applications in the case of vaginitis.

Diseased Conditions of the Vulva and Vaginal Inlet.—These, by preventing the proper performance of coition, are a cause of sterility. Their treatment is described under their respective headings.

Conical Cervix and Pin-hole Os.—The sterility associated with this malformation can, in a large number of cases, be successfully treated by

dilatation of the cervix to permanently enlarge the cervical canal. For further details see the treatment of sterility associated with virginal dysmenorrhœa.

Displacement of the Uterus.—Retroversion of the uterus markedly militates against pregnancy ; or pregnancy occurring, abortion is very likely. Where such is discovered the best treatment is to correct the displacement by shortening the round ligaments intra-peritoneally. A pessary after rectification may be tried, but is far less likely to be successful. Descent of the uterus has a much less inhibiting effect on conception, but when extreme may prevent coitus altogether. In general, it may be said that the more treatment aims at restoring the normal conformation of the parts, the more likely is conception to occur.

PHYSICAL SIGNS OF DEFECT OF THE SEXUAL ORGANS ABSENT.— *Virginal Dysmenorrhœa.*—This type of dysmenorrhœa is often associated with sterility. In such cases the dysmenorrhœa and sterility may be cured by a dilatation of the cervix. It is important, if the cervix is going to be dilated for sterility, not to carry the dilatation too far—up to number 7 Fenton will be sufficient. If large dilators are passed, the cervix may easily be lacerated internally, at any rate at the level of the internal os ; and if inflammation results, this may in itself be a further obstacle to impregnation.

If dilatation has been unsuccessful at the first effort, or as a preliminary to this treatment, the patient may be kept in bed for three or four weeks and aseptic douches administered twice daily. Such preliminary treatment is of use in getting the vagina in as healthy a condition as possible and also in lengthening the interval of coitus.

The dilatation should be carried out a few days before the period is expected, and on cessation of menstruation coitus should at once be indulged in, as it is during the few days succeeding a period that a woman is most likely to be fertilized.

When dilatation of the cervix has failed, a successful result is sometimes obtained by dividing the cervix between the external and internal os, and then suturing the cut edge of the vaginal mucous membrane of one side to that of the cervical mucous membrane of the same side so that the canal is permanently enlarged.

Dyspareunia.—For the treatment of this condition the practitioner is referred to page 312.

Profluvium Seminis.—The frequency with which sterility is associated with this phenomenon has been already referred to. Such measures as directing the woman to remain perfectly still after coitus or to raise the buttocks so that they are on a higher level than the trunk, with the object of keeping the spermatozoa in the vagina, may be prescribed, but with very little hope of success.

It is in these cases, as in some others in which it is thought that the spermatozoa do not gain entrance into the uterus that artificial insemination may be tried.

This method of treatment is often successful in the case of mares and cows, so that there is no inherent reason why a similar measure of success should not be obtained in women, but it has never been tried on any extensive scale, or at any rate there are no statistics available dealing with it. It is, however, undeniable that it has been successful in certain cases ; but the fact that such treatment is associated with a natural repugnance both in the patient and her medical attendant militates against its use as a routine treatment. Other reasons perhaps why such a treatment is not so likely to be successful in the human species is that in the latter the nervous system may play a certain part in impregnation, and, further, it is possible in the case of mares and cows to inject the spermatozoa of different stallions and bulls.

It is well known that a marriage may be sterile although the man and woman are apparently perfectly healthy, and that following a divorce the man and woman may marry again and beget children with their new mates.

Absence of Sex-Sense.—The nature and treatment of this is discussed on pages 114 and 312 under dyspareunia.

THE TREATMENT OF VULVAL PRURITUS.

When a definite cause for the itching is discovered, this must be removed if possible. The importance of examining the urine for sugar has been emphasized. If glycosuria be found, this must be treated by appropriate dietary and drugs. Irritant discharges from the vagina must be cured or mitigated by douching and other measures. In the two commonest types of severe pruritus the symptom is either of purely nervous origin or is due to the condition known as leukoplakic vulvitis. In the treatment of such the practitioner has the choice of—

1. The use of antipruritic applications.
2. Irradiation.
3. Ionization.
4. Operation.

ANTIPRURITIC APPLICATIONS.—There are a large number of these, which variously succeed in different cases. First may be mentioned mild alkaline solutions such as borax (four drachms to a quart) and liq. potassæ (two drachms to a quart).

The common sedative lotions and ointments, such as lotio calaminæ, lotio plumbi, ungentum zinci, and ungentum calaminæ, may be tried.

In bad cases of pruritus, however, none of these have usually any effect, and indeed may make the patient worse. In such, therefore, more powerful applications are required, of which the following are a list : Ichthyol either applied pure with a brush or as an ointment (10 per cent.). Thyginol either applied pure with a brush or made up as an ointment (10 per cent.). Resinol ointment. Carbolic acid, 1 in 20, painted on or applied on lint. Menthol, 2 per cent. in almond oil. Zymocide as a lotion, 1 part to 5 parts of water. Methylene blue, 1 per cent., painted on the parts. Cocaine as an ointment, 5 per cent.— either alone or mixed with adrenalin. It may also be made up in combination with calamine ointment. Chloretone as an ointment combined with adrenalin (Parke-Davis). Liquor picis carbonis ♏xv to 1 oz. of soft paraffin. Oil of cade ℨi to 1 oz. of soft paraffin.

The foregoing substances and preparations are all successful in certain cases, whilst in others they either have no effect or increase the itching. No general rule can be laid down as to choice. On the whole we have found Zymocide the most efficacious.

In bad cases the practitioner will probably have to try all or several of them.

IRRADIATION.—Exposure of the parts to X-rays is effective in some cases, whilst it fails in others. In the purely nervous form of the affection the use of irradiation is empirical but is worth a trial when antipruritic applications have failed. It should be proceeded with very cautiously and only by one versed in this form of treatment.

In leukoplakic vulvitis we have seen some success from its use. But here again the results are variable, the condition being occasionally made worse by the rays. Irradiation in these cases should be limited to those in which indolent fissures or warty elevations of the surface are not present, for in our experience it has no effect in inhibiting the onset of carcinoma and may perhaps even hasten it. The same may be said of radium, in the use of which in leukoplakic vulvitis we have some experience. It is possible that the very variable results we have seen attained are due to the limitation of present knowledge in regard to the exact scope, dosage, and capabilities of this powerful therapeutic agent, and that the future may see great improvement in this direction.

IONIZATION.—This method of treatment may be tried in obstinate cases, ions of zinc, copper, or the silver being made use of. Our experience is limited to a few cases of leukoplakic vulvitis thus treated. The results were not very encouraging, but in bad vulval pruritus any measure that holds out hope of relief is worth trying before resorting to operative measures.

OPERATION.—In certain cases of leukoplakic vulvitis neither antipruritic applications, irradiation, or ionization have any effect, and the intolerable distress caused by the itching calls for more drastic measures.

In such the proper treatment is to excise the whole of the affected surface. This operation is not dangerous, and if the whole diseased area be removed, it is successful in its object. Its drawback is the deformity of the parts to which it gives rise. As, however, most of these patients are elderly women, this aspect of the operation is of relatively slight importance compared with the relief it affords.

There are certain cases in which excision should be unhesitatingly advised, namely, those in which indolent fissures or ulcers or slight warty excrescences from the leukoplakic surface are noted to be present. Microscopically these lesions all show the early beginnings of carcinoma.

THE TREATMENT OF OVARIAN TUMOURS.

If a practitioner discovers that his patient has an ovarian tumour, he should insist on its removal forthwith.

There are three possible exceptions to such a course of action :—

1. The patient being in labour, the tumour may be so small or in such a position (above the brim of the pelvis) that its presence for the moment may be neglected.

2. The tumour may be a secondary malignant growth, the primary growth being in the stomach, breast, or elsewhere.

3. Owing to great abdominal distension, the patient may have cardiac failure, bronchitis, or œdema of the lungs, in which case the administration of a general anæsthesia might easily prove fatal. In these circumstances, if spinal anæsthesia is not available, and the tumour is cystic, the fluid must first be aspirated, after which, when the general condition of the patient has improved, the cyst may be removed.

It is sometimes very difficult to persuade patients to submit to ovariotomy, especially if the cyst is a small one and not causing any noticeable distress. Apart from the dislike to any operation which is inherent in every one, and which can be dealt with by tact, such an objection will take the form of one or all of the following :—

> That owing to the scar a hernia will result.
>
> That owing to the scar the patient will not be able to take as much exercise as she used to.
>
> That on the removal of an ovary or ovaries mental disturbance will follow.
>
> That the patient may be rendered sterile, or that the chance of sterility will be increased.
>
> That the patient will lose her womanly attributes, and more particularly her sex-sense, so that her husband will " get tired of her."
>
> That an ugly scar will be left.

We will deal briefly with these objections.

Hernia.—The danger of hernia following an ovariotomy, or indeed any abdominal operation, has been much exaggerated. The practitioner can quite truthfully tell his patient that it is very rare for hernia to follow such operations, especially if the abdominal parietes are closed in an efficient manner and not by one layer, which is undoubtedly a fruitful source of hernia. If the cyst is inflamed or suppurating, and this objection is raised (a very unlikely thing, since the patient is generally so ill she is only too ready to submit to any procedure which will relieve her), the practitioner must admit that it is in such cases that hernia is most likely to result owing to the parietal scar being at times weakened by the tracks which may be formed where a drainage tube has been inserted, or by the parietal stitches having sloughed out, but that even then its occurrence is rare.

Inability to take Exercise.—It is quite certain that most women after a serious abdominal operation do not " feel themselves " again for nearly a year, and are for that time unable to resume all their former activity. This more or less enforced idleness is of itself generally sufficient to prevent stretching of the scar.

Occasionally one finds women who hunt or play golf, etc., resume these amusements too soon after leaving the surgeon's hands, and in these certainly there is a danger of the scar stretching. The practitioner, therefore, should inform his patient that if she takes proper care she will be able to resume her usual method of life and take all the exercise she used to without any fear. In our opinion no woman should commence active exercise until six months after the operation.

Mental Disturbances.—This is one of the most important objections the practitioner will have to meet, and we cannot do better than repeat what we have already set down on this subject in our *Text-Book of Gynæcological Surgery.*[1]

" In the early days of ovariotomy and salpingo-oophorectomy it used to be the fashion for medical men who were antagonistic to these operations to tell women that if they subjected themselves to such they would in all probability become insane ; and, in fact, such statements are still occasionally made by well-meaning but ill-informed persons. As we have indicated, it is not because the patient is a woman, nor because certain of her genital organs have been removed, that her mental balance is disturbed. The exciting cause is the shock of a severe operation, comparable, for instance, to the shock of childbirth, acting on an ill-balanced mind and predisposed to by anxiety concerning the approaching operation, and, in cases in which the ovaries have been removed, by the succeeding climacteric. The natural climacteric itself is responsible

[1] Cassells & Co. Ltd. Second Edition, 1919.

for many more cases of disturbance of mental balance than any operation."

Sterility or Relative Sterility.—It is obvious that if a healthy ovary is removed the chances of sterility are increased. Surgeons, however, no longer remove apparently healthy ovaries except perhaps when extirpating the uterus for cancer, or rarely to facilitate the removal of the uterus or diseased tube.

If the ovarian disease is bilateral, obviously the patient will be rendered sterile by the operation if the whole of both ovaries are removed.

The practitioner may, however, point out to the patient that as one or both of her ovaries are already diseased, the prospect of future maternity must, on this account, be much lessened or hopeless ; that her chances depend upon whether the disease is unilateral, or if bilateral, whether there is any portion of the ovary which can be saved.

As, however, the surgeon cannot tell for certain the condition of the ovary or ovaries, he should never perform an ovariotomy unless he has full leave to remove both ovaries if necessary.

Loss of Womanly Attributes.—That healthy ovaries give rise to an internal secretion which is of great importance to the female economy is proved, for when this secretion stops the climacteric ensues.

It is also true that with the approach of the menopause a certain number of women lose their comeliness. They become very stout or thin, as the case may be, and their temper perhaps irritable and uncertain.

It does not need a practitioner to teach a woman this : it has been the common experience of womenkind for countless generations. Many women also know that this change of life is due to the atrophy of their ovaries, and therefore rightly argue that the removal of the ovaries will induce the same condition.

Such an objection, if it is advanced, will probably be the most difficult to surmount, and we have known women who have refused an easy and safe operation on this account, and have waited till forced to submit to a very dangerous one.

Presence of a Scar.—It is difficult to imagine a woman so regardless of her health that she will refuse operative measures because of a resulting scar on a portion of the body which civilized women are unaccustomed to present to the gaze of the public, yet we have known such.

There is, of course, for obvious reasons, a certain excuse for such an objection on the part of young unmarried girls.

To such the practitioner may reply, if from the nature of the cyst it seems likely (marked fluctuation and thrill with no pain) that a large incision may not be necessary, that if the patient regards the matter of paramount importance, the incision may be made transversely just above

the level of the pubes, so that when the pubic hair has grown again the scar will be hidden, or failing this, the newer methods of uniting the skin with subcutaneous sutures or metal clips leave a very thin and shadowy scar.

Dangers of the Tumour.—It may be, however, that the patient will cross-examine the practitioner from another point of view, not so much with regard to her objections as with regard to the reasons he advances for his advice that the tumour should be forthwith removed, and he must be very emphatic in his replies.

The patient will ask the practitioner why she should have the tumour removed, and what are the dangers of leaving it.

He should reply that if it is not removed it may, in the end, by its mere size, kill her, interfering as it will with the pulmonary, renal, and cardiac functions, by pressure on the diaphragm, ureters, and abdominal veins.

If the tumour is not as yet causing any distress in this way, the patient may say that she will be content to wait until there is some tangible evidence of this increase in size (always hoping that it will not take place), when she will submit to operation.

The practitioner should state that an ovarian tumour might be a great menace to the life of the patient and the child if she became pregnant. To this she may reply that she is single and has no immediate intention of being married, and that if this event occurs then she will further consider the matter ; or being married, she may express her intention of preventing conception, and that if she accidentally conceives it will be time enough to remove the tumour.

The practitioner should then inform his patient that these tumours are liable to certain complications, such as twisting of the pedicle, hæmorrhage, inflammation, and rupture, all of which may be fatal. He will then certainly be asked if it is not possible to diagnose such complications, and he will be bound to admit that it is, and in reply to further questioning that if they are treated sufficiently early in a large majority of cases the result is entirely satisfactory ; but in reply to his patient's assertion that, in the circumstances, she will wait till such a complication arises, promising on the least sign of anything " going wrong " to at once seek medical advice, the practitioner should point out that rupture of a cyst is really a very dangerous complication, as papilliferous growths of a malignant nature may be sown all over the abdominal contents. We have known patients, having ascertained that such cysts are in a great minority, take the chance of such a complication.

In the last resort the practitioner should point out that the tumour, cystic or solid, may be cancerous in nature ; that no one can possibly tell till the tumour is removed and examined whether it is so or not ; and

that supposing it is, its removal, before it has spread, will be the means of saving her life.

OVARIAN TUMOURS COMPLICATED WITH PREGNANCY.—The remarks already made are also applicable to ovarian tumours when complicating pregnancy, and even with more emphasis if this is possible ; since twisting of the pedicle is peculiarly likely to occur, the tumour grows faster, and miscarriage may result.

Ovariotomy during pregnancy is a safe operation, and in the majority of cases the labour is not shortened but occasionally the uterus empties itself.

With this knowledge, therefore, the statement that it is right to remove ovarian tumours in pregnancy must be qualified.

If the patient is pregnant for the first time perhaps after years of sterility, or at an age when further pregnancy is not so likely to occur, and especially if the parents are particularly anxious for a child, the operation may be postponed till the child is viable or the pregnancy has arrived at term when the tumour may be removed. In this case there can be no doubt that if the birth of a living child is urgently wanted, it will certainly be the best treatment to deliver it by Cæsarean section directly after the tumour is removed.

OVARIAN TUMOURS COMPLICATED WITH LABOUR.—If the tumour is above the brim of the pelvis and is not interfering with labour in any way, its removal may be postponed a few days ; but if the tumour is interfering with labour in any way, the proper treatment is to open the abdomen and remove it. The alternative treatment, if the tumour is below the presenting part, of pressing it up if possible, and delivering the child with forceps, may suffice, but it is not so good, as there is a danger of the tumour rupturing, twisting, or becoming septic.

OVARIAN TUMOURS AND THE PUERPERIUM.—Ovariotomy should be performed as soon as convenient after labour. The tumour may not be discovered until then, the decrease in the size of the uterus causing the pedicle to twist, or the passage of the child bruising the tumour. In such cases the tumours may become septic and give rise to symptoms which before now have been mistaken for puerperal sepsis, with a fatal result.

THE TREATMENT OF ASCITES.

The treatment of ascites must be directed towards the cause. In many cases this is located in the heart or liver, and will have to be treated on medicinal and dietetic lines, the details of which are not within the scope of this work.

In a certain proportion, however, no definite lesion can be discovered to account for the peritoneal effusion, and in such the question of an operation, in the first instance for exploratory purposes, is rightly to be considered. Thus, on the abdomen being opened, the cause of the ascites may be found to be a small papilliferous cyst of the ovary, a papilloma or carcinoma of the tube, or tuberculous peritonitis starting perhaps in a tuberculous tube, mesenteric glands, or the appendix. Though most of these conditions give rise to physical signs which disclose the seat of the disease if not its nature, yet in some instances nothing short of an abdominal section will reveal them.

Cases of ascites of unknown origin are as a rule best treated by an operation which, if not successful in removing the cause, at least makes clear to the practitioner the diagnosis and the appropriate treatment.

THE TREATMENT OF ENCYSTED ASCITES.

The difficulty in making a certain diagnosis of this condition, and still more of accurately determining its cause, is a strong reason for advising an abdominal section in every case.

If the encysted ascites is tuberculous in origin, the mere opening of the peritoneal cavity is very beneficial.

When the abdominal cavity is exposed, the opportunity may be taken of examining the ovaries and uterine tubes, and these if diseased should be removed. The general health must be attended to during convalescence, and sanatorium treatment may be prescribed.

Encysted ascites of non-tuberculous origin can at times be cured by the application of tincture of iodine over the affected area daily till the skin becomes too sore to allow a continuance of the painting. This counter irritation is repeated as soon as the patient can stand it, and can be carried out for a few weeks, the patient being kept at rest meanwhile and given hot douches night and morning. If this treatment fails, the abdomen should be opened, the fluid evacuated, and the chronically diseased tubes, which are usually the source of the condition, removed.

THE TREATMENT OF BROAD-LIGAMENT CYSTS.

All broad-ligament cysts should be removed. The cyst has usually to be enucleated, the peritoneum of the broad ligament above the cyst being carefully incised so that the fingers may be inserted between the cyst and the broad ligament. The operation may be a very difficult one, especially if the cyst is or has been inflamed. Particular attention has to be taken that the ureter is not severed, and large veins running at the

bottom of the broad ligament will require careful attention, as the hæmorrhage from these if not at once checked may be dangerous. The cyst having been enucleated, the cavity in the broad ligament that remains must be obliterated by a series of continuous sutures. In certain cases of burrowing and adherent cysts it may be quite impossible to remove the whole tumour. In such, as much as possible of the cyst wall will have to be cut away and the rest brought up to the parietal wound and drained.

Some broad-ligament cysts are pedunculated, and are then as easy to remove as the ordinary ovarian cyst.

THE TREATMENT OF CYSTIC TUMOURS OF THE UTERUS.

Fibro-cystic Tumours.—The treatment of a uterine fibroid that has undergone cystic degeneration is the same as that for fibroids in general. The fact that the tumour has become cystic is a strong indication for operative interference (see Treatment of Fibroids).

Hæmatometra.—The treatment of hæmatometra will depend on its causes and on the condition of the uterus and tubes. Thus if the retention is due to a so-called " imperforate hymen " the evacuation of the fluid, by simply incising it, may be sufficient to cure the condition. Occasionally, however, by the time the patient is brought to the surgeon bilateral hæmato-salpinx is present with signs of pelvic peritonitis. In such the mere evacuation of the blood from the uterus will probably be insufficient, and it may be necessary to open the abdomen and remove the tubes or even the uterus as well.

Hæmatometra due to absence of the vagina usually demands hysterectomy (see pp. 314 and 376), but if occlusion of the cervix is the cause of it, it may be possible to restore the natural passage (see p. 292). Failing this, the uterus will have to be removed. A large collection of blood in the uterus may be caused by the presence in its wall of a hæmorrhagic sarcoma, or chorio-carcinoma The removal of the organ if it be possible in such a grave event is naturally called for.

Pyometra.—The treatment of pyometra due to cancer of the body or neck of the uterus, to a sloughing fibroid or to endometritis, will be that of the disease causing it, and will be found under these respective headings.

THE TREATMENT OF HYDATID CYSTS.

Hydatid cysts of the ovary, uterine tubes, or broad ligament should be treated in a similar way to other tumours in these situations, by excision or enucleation.

Hydatid cysts in the cellular tissue of the pelvis may be evacuated through an abdominal incision, or if they have already burst into the vagina, bladder, or rectum they may be evacuated through these organs by enlarging the hole of the exit.

THE TREATMENT OF FIBROIDS OF THE UTERUS.

The practitioner is often perplexed, when consulted by a patient who is suffering from fibroids, as to the best treatment to advise, and his task is made no easier if he is aware of the diversity of opinion on this subject still held by various gynæcologists ; which is illustrated, on the one hand, by the contention of those who having inefficiently studied the subject continue to regard fibroids as innocuous tumours, and, on the other hand, by the views of those extremists who maintain that because fibroids at times destroy life, therefore these tumours should always be removed.

During the past decade or so the natural history of these tumours has been so closely studied that we now know that neither of these views is correct, and that the only safe rule is to judge each case on its own merits.

Fibroids of the uterus are extremely common tumours (40 per cent. of women over forty are said to have them), and relative to their frequency they rarely cause serious trouble.

It must, however, be remembered that the figures given are obtained from post-mortem room findings, and that the majority of fibroids thus discovered are very little larger than a pea.

Supposing, however, that the records of those fibroids only are considered which are demonstrably present during life, the subject assumes an entirely different aspect, and it is found that, compared with the number of fibroids thus detected, the percentage morbidity is very much greater than is generally supposed.

The dangers of fibroids of the uterus have, therefore, been elucidated, not so much by the pathologist, as by the modern gynæcological surgeon, whose work has disclosed, firstly, that these tumours may be the seat of serious complications ; secondly, that by their environment they may jeopardize the patient's life ; and thirdly, that in many cases tumours treated as fibroids are not so in reality, or, being fibroids, are associated with other tumours or morbid conditions.

Fibroids may need treatment because of their size or because of hæmorrhage, of pressure, of degeneration, or of some other complication.

Size.—Apart from or in the absence of pressure symptoms the mere size of a tumour may be an indication for its removal on account of the

deformity it causes or because in a young woman it may occasion suspicions of pregnancy. Moreover, a tumour of any considerable size is best removed even if it be giving rise to no symptoms, because as a matter of experience sooner or later it will do so. And further, at this stage it will be almost certainly possible for the surgeon to conserve the uterus, whereas if the operation be postponed until the fibroid is giving rise to symptoms this may be impossible.

Hæmorrhage.—Hæmorrhage is the cardinal symptom of a fibroid, and has been fully dealt with on p. 166.

We may divide patients suffering in this way into three classes :—

1. Those in whom the hæmorrhage is slightly excessive.
2. Those in whom the hæmorrhage is distinctly excessive.
3. Those in whom the hæmorrhage is profuse.

Hæmorrhage slightly Excessive.—In this class the menstruation is a little excessive, but the normal amount peculiar to the particular patient must be taken into consideration, since what is excessive for one woman is not for another.

The majority of these patients do not come under the care of a surgeon, the slight excess does not affect their general health, and they are content to let it rest at that, or their family practitioner is able to keep the loss under control by medicinal measures.

Hæmorrhage distinctly Excessive.—This is the most difficult class to deal with. Personally we have no doubt that these patients should be cured through the means of surgery, as our experience is that if a patient is losing to the amount indicated under this heading medicinal measures are of very little use, and the patient becomes a chronic invalid.

Some authorities divide these patients into two classes, those that have to earn their own living, and those that have not.

It is obvious that if a woman bleeds so much every month that she has to stay away from her work for one or more days, her employer must find some one to take her place who is not thus handicapped. This class of patient must come to operation or be kept by her friends.

It is the treatment of the second class, comprising those women whose loss is distinctly excessive, but who have not got to earn their own living, which is even at the present day so unsatisfactory. In a certain number of cases these women are allowed and counselled to lead the lives of semi-invalids rather than submit to an operation which is described to them as very dangerous. They are continually being dosed with medicine, the value of which is more than doubtful, since the most it appears to do is to lessen the loss just a little, and they are buoyed up with the prophecy that at the menopause they will be cured. This prophecy is nearly always falsified. But even if it was always true the menopause may be many years off, and fibroids invariably prolong the menstrual life.

As far as we can ascertain, the sole reason for denying such patients surgical relief is that the operative measures to secure it are said to be dangerous.

The danger, however, is not, in most cases, the nature of the operation, but lies in the fact that these women are, in our opinion, incorrectly advised, until their general health is so depreciated that what would once have been a safe operation now assumes a serious aspect. After many years' experience, when we look back on the cases that have come under our care and that of our colleagues, we find that nearly every case that did badly, after surgical interference, had been allowed to get into a serious condition either from not taking any advice at all or because treatment of a palliative nature had been wrongly persisted in.

We can understand such difference of opinion as we have indicated between family practitioners and those working in the wards of a hospital, since the gynæcological surgeon from the very nature of his position has to deal only with serious cases which require operative treatment. He is not brought into contact with that class of woman in whom the loss from fibroids is only slightly excessive.

With the family practitioner, on the other hand, the case is somewhat different, for the serious cases do not come so often under his treatment, and as, therefore, most of his patients do quite well on occasional medicinal treatment, fibroids of the uterus do not appeal to him in such a serious light.

But the teaching of some of the older gynæcologists, that these women should be left alone until they are so exsanguinated that their further existence seems doubtful, before being operated upon, is entirely wrong, and, moreover, entirely pernicious, since the laity are only too ready to follow advice which deprecates operation.

HÆMORRHAGE PROFUSE.—In these patients the hæmorrhage must be arrested by some surgical measure. The alternative of irradiation may be considered in some cases, though, personally, we are not in favour of it (see p. 396). It may be that enucleation of the fibroid or fibroids will be sufficient, or, as is often the case, the uterus will have to be sacrificed. These cases do not require much consideration. If a woman is flooding profusely at every period and perhaps losing a fair amount between, it is obvious that nothing short of an operation will save her. These cases are, fortunately, rare, and even in preoperative days death from hæmorrhage was uncommon.

The operation of removing a fibroid polypus or enucleating a submucous fibroid is without danger to one who is used to operating, and after all only such a one should attempt it. The operation of hysterectomy in uncomplicated cases is also remarkably safe when carried out by those experienced in such work, the mortality being exceedingly small

(many operators have had runs of 100 or 200 cases of fibroids without a death, the cases not being picked).

There is no reason, therefore, on the score of danger, why a fibroid which is causing trouble because of its excessive hæmorrhage should not be removed.

PRESSURE.—A reference to page 181 will show the dangerous effects that may result from impaction and pressure of fibroid tumours.

Directly there is any evidence of such pressure the practitioner should advise his patient to have the tumour removed. It would have been much better for the patient if the tumour had been removed prior to the onset of such symptoms and signs, since the operation would have been easier and, therefore, not so dangerous, and the patient would not have been injured in any way. If a fibroid such as that under discussion does not give any warning of its presence, the surgeon has no chance of anticipating trouble by an early removal. At times, however, during a routine examination a fibroid may be found in such a position or of such a size that its removal forthwith should be undertaken, or short of this the patient should be examined sufficiently often so that if the fibroid is increasing in size its removal should at once be recommended. A fibroid tumour may increase in size for a certain time and then stop growing.

The size of a tumour may, moreover, be sufficient to raise a suspicion of pregnancy, in which case, if the woman wishes, it should be removed even though it is causing no trouble at all.

DEGENERATION, INFLAMMATION, AND TORSION.—The sections on pages 183 and 184 describe these complications to which fibroids of the uterus are liable, and how they may be detected. When they occur, the proper treatment is to remove the tumour as soon as possible.

FIBROIDS OF THE UTERUS AND PREGNANCY.—As a rule fibroids do not interfere with the progress of pregnancy. They may, however, do so by causing retroversion of the uterus, in which case, if the uterus cannot be replaced by the recognized methods (with or without an anæsthetic), the abdomen must be opened and the condition dealt with as circumstances indicate. If the fibroid is pedunculated or sub-peritoneal in nature, it may be successfully excised or enucleated and the pregnancy left undisturbed, or the pregnancy be removed through an incision in the uterus, after which the fibroid or fibroids are enucleated and the uterus conserved with sutures, or, the uterus having been righted, the abdomen may be closed with the hope that the pregnancy will remain undisturbed, or if the surgeon thinks it necessary the uterus may be removed.

If the fibroid undergoes degeneration during pregnancy, as it sometimes does, it should be enucleated with or without emptying the

uterus by an incision through the wall, or the uterus should be removed. This is a safer procedure than enucleation, since, if the degeneration is of the red variety, it is probably a septic condition. Rarely the veins over a fibroid may become so enlarged during pregnancy that one may burst. The serious internal hæmorrhage that results will necessitate an immediate laparotomy and probably a hysterectomy. If the fibroid is of such a size or position (cervical) (Fig. 151) that birth of the child is out of the question, the pregnancy should be allowed to go to term, a Cæsarean section being then performed, and the uterus removed or the fibroid enucleated.

FIBROIDS OF THE UTERUS AND LABOUR.—If the fibroid is submucous in nature and is below the presenting part and obstructing labour, a very rare combination of circumstances, it should if possible be enucleated.

If the fibroid is otherwise situated and is obstructing labour, the abdomen should be opened, Cæsarean section carried out, and the uterus or tumours removed according to whichever treatment is the best.

FIBROIDS OF THE UTERUS AND THE PUERPERIUM.—If post-partum hæmorrhage is due to the presence of a fibroid, and it cannot be arrested by the recognized methods, the fibroid must be removed either by enucleation or hysterectomy as the case may be.

The same method of treatment will be indicated if the fibroid becomes septic or the seat of degeneration.

ADENO-MYOMA OF THE UTERUS.—The diagnosis of adeno-myoma from the far more common myoma (fibroid) cannot be made before the uterus is removed. The treatment of these tumours is therefore the same as that for fibroids of the uterus.

MYOMECTOMY OR HYSTERECTOMY.—Although many years ago Alexander strongly advocated the removal of multiple fibroids of the uterus by enucleation, it has been the practice in Great Britain since hysterectomy became such a safe operation, to treat fibroids of the uterus needing operation, by removing the whole of the organ or that portion of it above the level of the internal os. To this almost invariable custom there were two recognized exceptions, firstly, if the tumour was pedunculated, either subperitoneal or submucous, when the pedicle was severed, or secondly, if there appeared to be only one or two sessile subperitoneal tumours, in which case it has been a common practice to enucleate them.

The arguments which have been advanced by many recognized authorities in this branch of surgery against the operation of enucleating multiple fibroids of the uterus are as follows :—

1. That the hæmorrhage which necessitates an operation may not be cured by enucleation.

   (a) Because a small submucous fibroid may be overlooked.

(b) Because, although the fibroids may be removed, the thickened endometrium which at times is associated with these tumours, and is in itself a source of bleeding, is not dealt with.

(c) Because the hypertrophied uterus with its increased endometrial surface remains.

2. That a small fibroid being missed, its increase in size may in due course necessitate a further operation.

3. That if the patient subsequently becomes pregnant, the uterus is liable to rupture.

4. That enucleation is a more risky operation than hysterectomy.

With regard to these four objections the following statement can be made :—

1. (a) The chance of missing a small submucous fibroid is practically nil, *if the uterine cavity is opened*, as it should be, in all cases in which hæmorrhage is the determinant factor for operating.

(b) When the cavity of the uterus is opened, the thickened endometrium, if present, can be very efficiently removed with a sharp spoon.

(c) After enucleation, the increased bulk of the uterus due to the hypertrophy can be remedied by removing sufficient to make the uterus normal in size or nearly so.   Moreover, a certain amount of involution invariably takes place after enucleation.

2. There are no statistics available to warrant the statement that the pregnant uterus is more likely to rupture in such circumstances.   On the other hand, we have personal experience of successful and normal deliveries at term after the operation of enucleation and

3. On occasions a pregnant uterus ruptures after a previous Cæsarean section, but this complication has never been held, by those most capable of giving a sound opinion, to warrant the selection of Cæsarean hysterectomy as a routine practice.

4. The general statement that enucleation is a more risky procedure than hysterectomy is not true, at any rate our own results and a considerable experience lead us to no such conclusion.   It is undoubtedly true that in certain cases enucleation would be the more risky operation, as for instance in a case presenting multiple large fibroids, or on a patient in whom the previous hæmorrhage had brought her to a very dangerous condition.

Whether or no a particular case is more suitable for the one operation or the other may be a matter of fine judgment and will require considerable experience of the surgeon, but this is no valid argument against the operation of enucleation.

The chief danger of enucleation is hæmorrhage at the time of the operation or after. More blood is lost by enucleation than by hysterectomy, and if the patient is already exsanguinated, this is an important point.

Unless the bleeding is very efficiently controlled, there is a distinct danger of post-operative oozing, which may lead to the bowel becoming adherent to a scar in the uterus and so to intestinal obstruction. The danger of such a complication, however, will depend entirely on the dexterity and judgment of the surgeon.

Enucleation is contra-indicated in the following circumstances :—

1. When any secondary change of a septic nature is taking place in the tumour, or if the uterus itself is septic.
2. When there is " fibrosis " of the uterus in addition.
3. When the tumour is in the supra-vaginal cervix.
4. When the patient is suffering from excessive anæmia.
5. In elderly women with large multiple fibroids.

Although it is true that most women after enucleation of fibroids are sterile or remain sterile, this fact is not due to the enucleation, but because most of the patients are beyond the age of child-bearing. Other things being equal, a woman is quite able to conceive and pass through her pregnancy, labour and puerperium, quite safely after enucleation, and this fact is a great point in its favour.

Finally, apart from its physical value, the womb has for many women a sentimental value, and to such the loss of it is attended with abiding regret. In the past, when the technique of enucleation left much to be desired, the surgeon very properly declined to put his patient to an increased risk for the sake of pure sentiment, but of late the operation has been so much improved upon that in a very large proportion of the cases it is possible for him, if the woman so desires it, to remove the tumour or tumours alone, and save the uterus.

THE TREATMENT OF PELVIC CELLULITIS.

Before the formation of pus, pelvic cellulitis must be treated by rest in bed, hot douches, a regular evacuation of the bowels, and quinine as a tonic and to help to reduce the temperature. If necessary in the first few days opium in one form or another may be prescribed internally for the pain, and externally glycerine and belladonna may be painted

over the swelling. As the illness is likely to be somewhat prolonged (at least a month in the absence of suppuration, and from two to three months if suppuration results), the general health must be attended to.

As soon as there is any indication of pus, an incision should be made over the swelling and through the skin and subcutaneous tissues. A
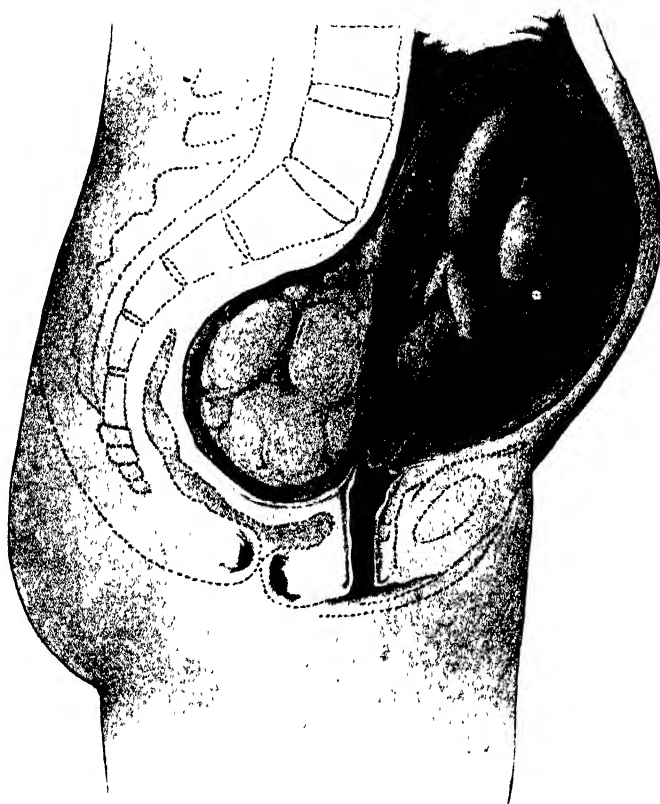
FIG. 151.—MYOMA LYING BEHIND THE PREGNANT UTERUS.

director should now be inserted into the swelling, and when the pus is struck the director should be removed and a pair of forceps introduced. By separating the points of the forceps and then extracting them, the hole will be enlarged sufficiently to insert the finger. The pus should then be well evacuated, and the cavity irrigated with a hot iodine douche, after which a large drainage tube should be inserted.

The further treatment will consist in a daily douching and the gradual reduction in the size of the drainage tube till it is no longer required.

THE TREATMENT OF PELVIC PERITONITIS.

The first point to be decided is the cause of the peritonitis. This is most commonly salpingitis, but other lesions of the pelvis, such as torsion of a tumour, extra-uterine gestation, infection or degeneration of a uterine fibroid, inflammation of the vermiform appendix, and so forth, all produce it.

If the cause be known, the treatment is that of the various conditions cited above.

There remain certain cases in which the origin of the peritonitis is obscure, and the problem set the practitioner is the best method of treatment.

In general it may be said that the more obscure the origin of an attack of peritonitis, the more reason is there to operate early, for though there may be justification in adopting expectant treatment in the case of a condition whose nature and probable course is known, it is obvious that this must be much less commonly the case when a total absence of such knowledge exists.

If palliative treatment be decided upon in spite of the obscure nature of the disease, this should be pursued in a manner similar to that employed in the milder cases of cellulitis. In these cases, however, the pain is generally worse, and the administration of opium is more often necessary.

Such treatment, however, is in our opinion rarely justifiable, for there is always a strong probability in these obscure cases of pelvic peritonitis that the underlying lesion is an inflammation of the appendix, and we have not infrequently seen cases in which the failure to operate early placed the patient in great danger from this cause.

In general, pelvic peritonitis should be treated by abdominal section, but when a pelvic abscess has formed this can be evacuated by an incision through the vagina into the pouch of Douglas, though as a rule it is not a good proceeding.

THE TREATMENT OF SALPINGITIS.

Acute Salpingitis.—The treatment of acute salpingitis depends upon its cause, the severity of the disease, the size and nature of the swelling formed in consequence of it, and the stage at which it comes under the practitioner's care.

The first point the practitioner will have to decide is whether or not to have the case operated upon. In making this decision the cause of the inflammation must be taken into account, the degree of the symptoms and the extent of the peritoneal involvement, the presence or otherwise

of a distinct mass in the pelvis, and the stage at which the patient comes under treatment.

Cause.—Salpingitis the result of gonorrhœa, septic abortion, or labour is apt to run a violent course ending in suppuration. In such, then, the indication for early operative interference is strong.

On the other hand, persons suffering from chronic endometritis, especially with retroversion, are liable to occasional slight attacks, which rarely proceed beyond a thickening and matting of the parts concerned, and in them palliative measures may be fully justified.

Finally, there are cases in which no definite cause is apparent. Some of these are due to tuberculous infection.

It may be emphasized that the absence of any obvious cause for an apparent attack of salpingitis should always arouse the suspicion that the illness may not be due to salpingitis at all, but to inflammation of a vermiform process lying in the pelvis or some other rarer condition.

It is a good general rule to follow that uncertainty in diagnosis either of cause or condition is always a point in favour of an operation.

Degree of the Symptoms.—The more severe the symptoms the more indication for operative measures, and *vice versa*. The extent of the peritonitis is the most important feature to gauge—anything like generalized rigidity of the abdominal wall means an extensive lesion, as does great rapidity of the pulse, combined with constant vomiting and marked distension. In such cases, as a rule, an operation should at once be performed.

In other instances the condition may appear entirely localized in the pelvis, and the constitutional disturbance relatively slight. In such it may be quite justifiable to withhold surgical interference for a while in the hope that the attack may abort.

The Presence of a Mass.—An obvious mass in the region of the uterine tube or tubes usually means that an operation will have to be carried out sooner or later. The more fixed and the more tender the swelling the more likely is it that pus is present.

The general treatment of a pyosalpinx is to remove it as soon as possible. To delay doing so subjects the patient to the risk of extension of the infection to the abdominal peritoneum, or the pus may find an exit *via* the rectum, vagina, or bladder, generally the former, in which case the operation for the removal of the tube becomes much more difficult and dangerous, and the chance of a post-operative fæcal fistula is considerable.

The removal of a pyosalpinx may be one of the most difficult operations in pelvic surgery, and is one that requires a large amount of experience in the knowledge of how to deal with the various complications that may arise. The difficulties increase with the length of time that elapses

between the onset of the inflammation and the date of the operation because the adhesions become more profound. For this reason alone it is advisable to deal with the condition as soon as possible. Exceptions to this rule are certain neglected cases, which do not present themselves until they are profoundly ill of toxic absorption with high fever, emaciation, and a very rapid pulse, and in which an immovably fixed solid mass occupies the whole of the pelvis.

In such, the propriety of operating at once or of awaiting an improvement in the patient's condition before doing so has very closely to be considered. It is certain that a very considerable mortality attends surgical measures carried out when the patient is in this state. On the other hand, the expected improvement may not occur, and the difficulties confronting the surgeon may be still further increased.

Great experience is requisite in dealing with such cases, and the practitioner will be well advised to take counsel with an expert.

The absence of a definite mass may have one of two significations. In the first place, when conjoined with violent constitutional symptoms and signs of extensive peritonitis it indicates that pus is escaping direct from the uterine tube into the peritoneal cavity without any previous thickening or distension. These are urgent cases, and should be operated on at once.

In the second, when conjoined with slight symptoms and purely local signs it indicates a slight grade only of salpingitis. In such, palliative treatment in the hope of spontaneous absorption may certainly be tried.

The Stage of the Attack.—At the very outset of an attack of salpingitis it may be advisable to wait a short time in order to watch the trend of events. Before deciding to follow this course the practitioner must be practically certain that he is not dealing with one or other of the more grave causes of peritonitis, such as appendicitis, or a perforated viscus, for in such to delay an operation may be a fatal error.

Further, he is not justified in postponing operation in any case of admitted salpingitis when the initial symptoms point to acute leakage of pus into the peritoneal cavity.

Cases that only come under his care when the symptoms are abating may very well be left for a while to see how far the inflammatory mass may absorb.

Recurrent attacks are usually less severe than primary attacks, and in such immediate operation is less indicated, though the indication for an operation subsequently is strengthened.

The most difficult of decision are those late cases in which, with a large mass absolutely fixed in and filling the whole of the pelvis, the patient is in a dangerous state from septic absorption. In such it may be urged that by waiting until she has in a measure recovered, the operation will be better borne. This would be so, provided the desired improve-

ment came about. It may, however, be that no such amelioration of the symptoms will occur, with the result that the operation to be faced will be rendered yet more grave.

Each of these cases has to be judged on its own merits, and no general rule can be laid down. The practitioner will be wise if he shelves the responsibility of advising an operation on to the broader shoulders of an expert in this class of surgery.

General Conclusions.—It is apparent, therefore, that in determining the question of operating or waiting a number of considerations have to be taken into account, and that each case requires separate and careful consideration. We ourselves believe that in general the bolder course of operation rather than the timid hesitancy that counsels postponement is most likely to be successful in doubtful cases. We are acquainted with many cases that died from operating too late. One of the chief advantages of operating early is that it is then, as a rule, possible to conserve some or all of the ovarian tissue, whereas when the inflammation has been long continued the whole of one or both ovaries may be disorganized.

The details of the operative treatment of salpingitis are not within the scope of this book. The abdominal route should nearly always be chosen. The severity of the operation varies with the state of the parts as found on inspection and the extent of removal necessitated thereby.

All modern surgeons aim at conserving the parts as much as possible. It is usually feasible to preserve part of the ovarian tissue if not all of it. In the worst cases, however, total ablation of the appendages has to be carried out, and the uterus may also have to be removed. Fortunately there is rarely necessity to proceed to this length.

In those slighter cases in which palliative treatment is determined on the procedure is as follows :—

The patient should be kept at absolute rest in bed, and will consequently require the services of a nurse or attendant. She should be properly dieted, amd all alcohol and stimulating food forbidden. The bowels should be kept well acting with a saline aperient, and hot douches given three times daily, several pints at a time. Following the evening douche a tampon of glycerine and ichthyol 10 per cent. should be inserted into the vaginal vault overnight and removed next morning, this being repeated every night for a week. For the pain, warm fomentations to the abdomen are very comforting, and aspirin is indicated in 10-grain doses as often as necessary. The use of morphia should be very restricted. Pain severe enough to demand it usually means a grade of inflammation severe enough to require operative interference. During recovery the general health should be attended to, tonics, sedatives, digestive mixtures being prescribed as indicated. Such treatment to be successful must be carried out for at least four weeks, and on occasions as much as eight

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weeks will be necessary. If at the end of four weeks there is no improvement, and the pain and swelling are still present, it is no good continuing the treatment.

Chronic Salpingitis.—The treatment of chronic salpingitis is similar to that of acute salpingitis, except that the prospect of palliative and absorptive methods of treatment proving successful is much less.

In all these cases a more or less indurated lump is felt in the region of the appendage or appendages.

If a hydrosalpinx or tubo-ovarian cyst is present the case should be operated upon, for the condition is either dependent on a present salpingitis or is the after-result of salpingitis. In either event the presence of the diseased tube or tube and ovary is a menace to the patient, for the distended tube may undergo torsion, rupture, suppurate, or become the seat of carcinoma.

The swelling at times attains a large size.

Early operation has, moreover, this advantage, that it may then be possible to perform salpingostomy instead of salpingectomy, and that part at least of the ovary may be saved, in which event pregnancy, if desired, is possible.

By far the most direct way to cure the patient in any case of salpingitis is to operate upon her. Conservatism should be the keynote of the surgeon. One or both tubes may have to be removed after freeing them of the adhesions that surround them. If possible, however, salpingostomy should be performed, the distended tube being emptied and a new abdominal ostium fashioned. As regards the ovaries, parts of them can usually be conserved or even the glands entire. Good results have been claimed in these cases by grafting them or parts of them into the abdominal wall.

A retroverted condition of the uterus often accompanies chronic salpingitis, and if this be so the uterus should be fixed in anteversion either by ventrofixation or by shortening the round ligaments.

The results of these operations are extremely successful when carried out properly.

Patients refusing an operation must be treated by rest, douching, ichthyol tampons, and so forth, as described under acute salpingitis. Many of them wander about from one spa to another, and form lucrative patients for those who believe in the efficacy of mud-baths, sprays, electricity, massage, and so forth : we do not.

THE TREATMENT OF SUBINVOLUTION OF THE UTERUS.

The treatment of subinvolution of the uterus must be directed towards the cause, so that if there is reason to believe that it is due to

retention of a piece of placenta the cervix must be dilated, and the retained portion removed with the finger or ovum forceps. If the patient comes under observation some months after labour, then the uterus should be curetted.

If the uterus is found misplaced soon after labour, it should be rectified and a pessary inserted. If the subinvolution is associated with some organic disease, or follows the anæmia due to severe ante-partum or post-partum hæmorrhage, the appropriate treatment for these conditions must be prescribed.

In a large number of cases the exact cause of the subinvolution will not be evident. In these patients the menorrhagia and leucorrhœa may be controlled by rest in bed, and the leucorrhœa treated by the local application of astringents by vaginal douching at a temperature of 105° F. The administration of the following mixture assists the uterus to shrink :—

R Liq. Ext. Ergot, ℥ ss. Liq. Strychnin. Hyd., ℳ v. Acid Nitro-Hydrochlor. dil., ℳ x. Aq. Chloroformi, ad ℥ i. *Sig.*—This dose three times daily after meals.	R Liq. Ex. Ergot, 30 c.c. Liq. Strychnin. Hyd., 5 c.c. Acid Nitro-Hydrochlor. 10 c.c. Aq. Chloroformi, ad 480 c.c. *Sig.*—Two tablespoonfuls three times a day after meals.

If after a month the administration of ergot has had no effect in lessening the size of the uterus, or if hæmorrhage is persistent in spite of it, curettage preceded by exploration of the cavity is the proper course.

THE TREATMENT OF ENDOMETRITIS AND METRITIS.

Acute Endometritis.—Acute endometritis should be treated by sending the patient to bed and keeping her for preference in the semi-recumbent posture so as to promote drainage. Frequent warm antiseptic douches should be administered, and if there is much abdominal or pelvic pain warm fomentations and aspirin are indicated. If signs of generalized sepsis are present the bacteriological content of the uterus should be ascertained, and in accordance with the findings a suitable serum may be administered or a vaccine prepared.

Acute septic or gonorrhœal infection of the endometrium may be complicated by suppurative salpingitis. In such cases the uterus should be removed with the tubes, for if left it is apt to become the source of a chronic purulent discharge very difficult to get rid of.

Chronic Metritis and Endometritis.—The treatment of chronic metritis and endometritis is one of the most difficult problems in gynæcology. This is due to the fact that in a large proportion of the cases so

labelled the condition is not really an inflammatory one, but is either the after-result of inflammation or is due to degenerative or hyperplastic growth changes, the cause of which is obscure. Under the present unsatisfactory nomenclature are included a number of conditions which while presenting a general similarity in their symptoms (periodic or irregular hæmorrhage with a somewhat enlarged uterus and often discharge) differ entirely in their origin and histological features.

The first point to be decided in any given case is whether the condition appears to be due to active infection or no. There are certain cases in which this is easy of decision, namely, those in which a definite discharge of pus is occurring from the uterus.

Most of these are met with in elderly women past the menopause (senile suppurative endometritis), but occasionally they are seen in relatively young women. Associated with the suppurative endometritis is a more or less severe vaginitis. The pus may become penned up in the uterus with the formation of a pyometra. This is especially common in the atrophic organ of old age.

There is another class of case in which, without the uterine cavity actually containing pus, a thin watery discharge takes place from it, very irritant to the vagina and vulva, which are both inflamed. Investigation of the discharge in both these classes of case shows various organisms present therein, such as streptococci, staphylococci, colon bacillus, diphtheroid bacilli, etc. In these, then, we have a true inflammatory condition of the lining of the uterus due to bacterial infection.

In by far the larger number of cases of so-called endometritis, however, no evidence of the presence of an infection of the cavity of the corpus exists, and, moreover, the scrapings removed by curettage fail to show any evidence of true inflammatory change.

In regard to the histological character of portions of endometrium removed by the curette it is important to remember that the lining membrane of the uterus is known to undergo periodic changes with each menstrual cycle, and that no interpretation of sections cut from them is of value unless the observer is conversant with what is normal.

Cases styled " endometritis " which, however, present no evidence of real inflammatory changes in the corporeal endometrium usually come for treatment either because of hæmorrhage or discharge. In regard to the last it is important to appreciate that the corporeal discharge is watery, not mucous, in character (see p. 62). The cases are divisible into two classes, those in which the endometrium is found hypertrophic (glandular endometritis) and those in which it is thinned, sclerosed, or deficient in glands. Both these conditions would appear to be due to growth changes, probably post-inflammatory in nature, for they are usually associated with signs of chronic cervicitis (see p. 245).

In many cases the pathological appearances are not limited to the corporeal endometrium, but are accompanied by a degenerative state of the whole uterine wall more or less. This degenerative state, to which the terms " fibrosis uteri " or " chronic fibrotic metritis " are applied, presents itself in two forms :—

1. One in which great fibrous thickening of the vessels of the uterine wall is found and

2. One in which a diffuse hyaline degeneration of the muscle fibres is noted in conjunction with a swollen and œdematous state of the connective-tissue fibres.

In either, the leading feature is more or less profuse periodic, or irregular hæmorrhage.

It is impossible to distinguish clinically the various conditions that come under the term endometritis further than this, that a purulent or irritant discharge from the uterus indicates active bacterial infection, and that a watery discharge means that the corporeal endometrium with its contained glands is hypertrophic.

As our knowledge of the factors leading up to and maintaining the abnormal state of the uterine wall is in most cases very slight, treatment has to be chiefly directed to curing the symptoms associated with it.

Of these, hæmorrhage and discharge are the two most constant. Pain of a " forcing " heavy character is quite common, especially in those cases in which the condition is associated with backward displacement of the uterus, as it often is. Dysmenorrhœa of the " congestive " variety, usually an accentuation of the discomfort felt the whole month round, is also frequent.

The measures proper for cases of chronic endometritis and metritis may be summarized as follows :—

Vaccines.—When a definite infection is proved to exist (see p. 381), the preparation of an autogenous vaccine may be indicated. Such treatment, to stand a chance of success, must obviously be strictly limited to those cases in which the infective nature of the disorder is proven.

Drugs to promote Uterine Retraction and lessen Hæmorrhage.—Of these, ergot is the most generally useful, but all the other drugs mentioned in connection with the treatment of uterine hæmorrhage may legitimately also be tried (see p. 293).

Local Applications.—Various methods of local application are in use. When an infective origin is undoubted, the application of substances like pure carbolic acid or iodized phenol to the endometrium is logical. In the non-infective cases the *rationale* of such a measure is comparable to curettage under like circumstances.

Hot douches, hip-baths, and medicated tamponage are frequently

prescribed to reduce the alleged " pelvic congestion." They are harmless and legitimate, but whether they have any real action is doubtful.

Curettage.—Erasion of the endometrium is performed in the hope that after removing the infected, or disordered though not infected, mucous membrane, a new and healthy lining to the interior of the uterus will grow in its place.

It is an operation very frequently performed in this connection, and its results are very variable, as might be expected. It is most likely to be successful when hæmorrhage and a watery discharge indicate the existence of a hypertrophic state of the endometrium, and most of all when, with symptoms of endometritis, a mucous polypus is present as well. On the whole, the results are better when the leading symptom is a watery discharge and not hæmorrhage.

Since chronic cervicitis usually accompanies endometritis, the cervix will have to be treated at the same time either by scraping or amputation (see p. 263).

Curettage is particularly apt to fail in those cases in which without endometrial thickening or even with endometrial atrophy a hard sclerotic state of the uterus is found indicating chronic metritis.

In short, when endeavouring to judge whether to advise curettage in any particular case the local features peculiar to it require careful consideration. The operation has this great advantage, namely, that it reveals the state of the interior of the uterus, and gives the practitioner something definite to go upon in the future. By thus exploring the cavity, the presence in it of polypi, small fragments of products retained from a previous conception, or even incipient malignant disease, may be disclosed.

In the admittedly infected cases curettage should be followed by the application of a strong antiseptic, such as carbolic acid, so as to minimize, as far as possible, the chance of reinfection.

The Application of Caustics.—Both in the infected and the non-infected cases destruction of the endometrium may be effected by the application to it of caustic substances such as chloride of zinc gr. xxx ad ʒi, pure nitric acid or superheated steam (atmocausis). Such measures are chiefly indicated when intractable discharge is the leading feature. If nitric acid is used the cervical canal should be protected by previously passing into it a short piece of glass tube after it has been dilated, and too deep action of the acid must be prevented by immediately washing out with an alkaline solution (liq. potassæ and water 1 in 20). Atmocausis requires a special apparatus, and is a proceeding of definite risk. We have never employed it ourselves and do not advise it.

The Correction of Displacement.—In our experience good results never follow curettage if the uterus, being misplaced, is allowed to remain so.

This particularly applies to retroversion and retroflexion. In all such instances the scraping should be followed by operative fixation (see p. 342), or by the insertion of a pessary after the uterus has been brought into normal position.

Hysterectomy.—In some cases of endometritis and metritis, when curettage and all the lesser methods have failed to cure the symptoms, the more radical measure has to be taken into account.

The operation most usually performed is removal of the uterus either in part or whole. The exact nature of the operation indicated depends upon the symptoms complained of and the condition of the cervix. In most cases it is on account of hæmorrhage that relief is demanded, and in such subtotal hysterectomy, *i.e.* removal of the corpus, alone will suffice. If, however, the cervix is markedly unhealthy or if leucorrhœa is complained of as well, then the whole organ had better be removed.

In cases in which the leading symptom is discharge the whole uterus should be removed, for in most of these cases an infected condition of the organ is present. Cases of suppurative endometritis in a senile uterus are, as a rule, best dealt with in this way.

Utriculoplasty.—Where the uterus is markedly enlarged and hæmorrhage alone is the reason for operating, it is feasible to merely remove a wedge-shaped portion of the organ so as to leave it, after suturing, much reduced in size. The uterine mucosa should be curetted through the opening made into the cavity when removing the wedge-shaped portion.

This operation we have performed with success in some cases and failure in others. Its advantage is that it does not take away all chance of future pregnancy—one of our patients, in fact, has borne three children since the operation—but in certainty of permanently curing the hæmorrhage it is, of course, entirely inferior to hysterectomy. It should be reserved for exceptional cases in which the patient is willing to take the chance of failure for the sake of the possibility of pregnancy.

THE TREATMENT OF POLYPI OF THE UTERUS.

Uterine polypi must be removed. The mere removal of one or more mucous polypi of the cervix is, however, not sufficient. The cervix should be dilated and a digital examination made to ascertain if there are any corporeal polypi present. Corporeal polypi should be removed with forceps and the endometrium then curetted, as it will in all probability be hypertrophied. Hæmorrhage, if any, following the removal of a mucous polypus can be controlled by the application of iodized phenol or by packing the uterus.

A fibroid polypus should be removed by division of its pedicle with a

pair of scissors. There will be no bleeding, the muscle of the stalk contracting round the vessels. At times a fibroid polypus is so large that the operator cannot reach the stalk, in which case the capsule of the polypus must be incised and the polypus then removed piecemeal until such time as the stalk can be reached. If the fibroid polypus is springing from the body of the uterus this organ should also be curetted.

The practitioner will be careful to remember that on a cursory examination an inverted uterus may easily be mistaken for a fibroid polypus, and, being removed in the same way, a fatal result will very likely ensue.

For further remarks on uterine polypi, see pages 368, 369.

THE TREATMENT OF MALIGNANT DISEASE OF THE BODY OF THE UTERUS.

If possible, the uterus should be extirpated. For further remarks on malignant disease of the uterus, see cancer of the cervix, page 370.

The prognosis of carcinoma of the body of the uterus when compared with that of the cervix is good. Sarcoma of the body of the uterus has a much more serious prognosis than that of carcinoma.

Chorio-carcinoma of the uterus should be removed at the earliest opportunity, always supposing there are not any secondary growths elsewhere, except perhaps in the vagina, when it is worth while to give the patient a chance by removing them also. A case thus treated by one of us entirely recovered.

It is a remarkable fact that spontaneous disappearance of secondary chorio-carcinomatous deposits is well known to occur sometimes.

Early diagnosis is the most important factor for success in this disease, and all suspicious material removed from a lately parturient uterus should be examined microscopically, as should any small hæmorrhagic nodule that may be found in the vaginal wall in like circumstances.

THE TREATMENT OF EXTRA-UTERINE GESTATION.

If from an examination of the patient there is reason to think that there is a fertilized ovum in her uterine tube, the abdomen should be opened as soon as possible and the diseased tube removed. In some cases it may be possible to remove the ovum and leave the tube *in situ.*

If rupture or tubal abortion has occurred, the right treatment is to open the abdomen and remove the diseased structure forthwith.

If by the time the patient is seen she appears to be recovering somewhat from the hæmorrhage, it may be safer to leave her for a few hours

and operate in surroundings and in circumstances which will be more likely to lead to a successful recovery ; but if she is obviously dying from internal hæmorrhage, an effort must be made to save her, whatever her surroundings may be.

If the practitioner is not summoned for some little time and the hæmorrhage is not very severe, a pelvic hæmatocele or hæmatoma will be found according to whether the hæmorrhage has been intra-peritoneal or into the broad ligament.

In either case the proper course is to open the abdomen and deal with the condition ; but in the event of insuperable objection on the part of the patient, or because skilled assistance cannot be secured, the patient must be kept in bed absolutely at rest in the hope that the blood may absorb. Such a course is, however, fraught with danger, and should only be adopted at the patient's own risk. There is a large chance of recurrent bleeding, while at times the hæmatocele or hæmatoma suppurates. In this event the pus and blood should be evacuated by an incision per vaginam.

Though the patient may escape these dangers, the fact still remains that a large hæmatocele left spontaneously to absorb almost invariably leads to a peritonitis which permanently seals the abdominal ostium of the remaining tube.

In certain early cases it is impossible to be certain by ordinary clinical methods as to the fact of an extra-uterine pregnancy. In such, an examination under an anæsthetic should be demanded, when the tube, if enlarged, may be felt, in which case the abdominal operation should for choice be immediately proceeded with.

THE TREATMENT OF PROLAPSE OF THE OVARY.

Ovarian prolapse often exists without causing any symptoms and then does not require treatment.

When it is otherwise dyspareunia is the most usual complaint.

If the prolapse is associated with retroversion of the uterus, it will be relieved when the position of this organ is rectified by a pessary or by the operative procedures mentioned on page 360.

When the prolapse occurs without backward displacement of the uterus, or in spite of the latter having been rectified by a pessary, the only course left is to open the abdomen and sling the ovaries up by pleating the ovario-uterine ligament.

The results of ovarian suspension, either by directly pleating the ovario-uterine ligament or by shortening the round ligaments, are extremely good when carried out for dyspareunia due to tender ovaries lying in the pouch of Douglas.

THE TREATMENT OF MOLAR PREGNANCY AND EARLY ABORTION.

If the uterus contains a vesicular mole it should be emptied at the earliest opportunity, since to delay doing so distinctly increases the danger to the woman. The operation has to be done most carefully, since the walls of the uterus are liable to be involved and may easily be perforated. During the evacuation of a vesicular mole very severe hæmorrhage may take place, and this cannot be checked until the mole has been evacuated. As much as possible of the mole should be removed with the index finger, the rest with an ovum forceps. The uterus should never be curetted. If the hæmorrhage continues after the uterus has been emptied it must be arrested with ergot, hot douches, and, if necessary, uterine packing. The patient should be warned to return and report after a few months, and if she has had irregular hæmorrhage the cervix must again be dilated and the interior of the uterus explored, since a small piece of the mole may have been retained or chorio-carcinoma may have developed.

The best method of treating a blood mole is to dilate the cervix under strict aseptic precautions and then empty the uterus.

An alternative treatment when the above method cannot be carried out efficiently, and the hæmorrhage renders it necessary that something should be done at once, is to pack the vagina tightly for twenty-four hours and administer ergot in full and repeated doses.

In most of the cases the hæmorrhage is not severe enough to necessitate packing, and in such, full doses of ergot with rest in bed may effectively arrest spontaneous evacuation of the uterus. If this treatment fails, and either the hæmorrhage continues or septic symptoms make their appearance, the uterus must at once be operatively emptied.

It cannot be sufficiently impressed on the practitioner that such emptying of the uterus must be thorough and complete, and carried out with all the precautions of a modern aseptic operation. The finger must be introduced and every part of the cavity explored and emptied. A general anæsthetic is necessary.

To attempt to operate without an anæsthetic or merely by passing a curette into the uterus is to invite the occurrence of grave sepsis.

THE TREATMENT OF DISPLACEMENTS OF THE GENITAL CANAL.

GENERAL CONSIDERATIONS.

THE SUPPORTING MECHANISM OF THE GENITAL CANAL. — The various clinical forms of displacement of the genital canal are

due to yielding either in whole or part of its normal sustentacular apparatus.

The natural apparatus that holds the uterus and vagina in position is divisible into three segments :—

An upper segment, which consists of the broad ligaments and the structures they comprise. This segment helps to support the body of the uterus in its normal anteverted position (see Fig. 27).

A middle segment, which consists of the utero-sacral ligaments and two strong fan-shaped fibrous expansions, which pass from the cervix and vaginal vault to the pelvic side wall on either side—the lateral cervico-pelvic ligaments. This segment holds the vault of the vagina and the cervix in their normal position (see Fig. 27).

A lower segment, which consists of the pelvic floor proper and comprises the levatores ani and the superficial perineal muscles, together with the fasciæ above, below, and between them. Included in this segment is the perineal body, the wedge-shaped piece of tissue intervening between the lower ends of the rectum and vagina as they diverge from one another. On the integrity of this structure depends the sharp curve forwards of the lower end of the vagina, whereby a partial valve-like mechanism is attained, hindering anything descending the canal from passing straight out (see Fig. 27).

SEVEN CLINICAL VARIETIES OF DISPLACEMENT.—There are seven clinical varieties of displacement of the genital canal, according as to whether one segment singly, two segments in combination, or the whole three segments have yielded.

1. *Yielding of the Upper Segment.*—Yielding of the upper segment results in retroversion of the uterus. The backward movement of the uterine body tends to tilt the cervix forwards, and hence impresses an unnatural strain on the utero-sacral ligaments, which yield more or less. On the degree to which this secondary yielding occurs, and on the consistence of the uterus depends the extent to which retroflexion complicates retroversion (Fig. 152).

2. *Yielding of the Middle Segment.*—This allows the intra-abdominal pressure to *invert* the vaginal vault. The cervix is dragged down in the process, and the uterine fundus being held in its normal position by the intact upper segments, the uterus elongates especially in its cervical segment. Thus is produced the elongation of the supra-vaginal cervix that characterizes these cases (Fig. 153).

The deformity results in a greatly increased strain being thrown on the broad ligaments, which is apt sooner or later to yield secondarily.

3. *Yielding of the Lower Segment.*—This results in the vagina *everting* from below upwards. The anterior wall takes the lead as a rule, because the loss of the perineal body deprives it of support, and, moreover, it is

more directly exposed to the intra-abdominal pressure. With the
anterior vaginal wall comes down the bladder herniated between the
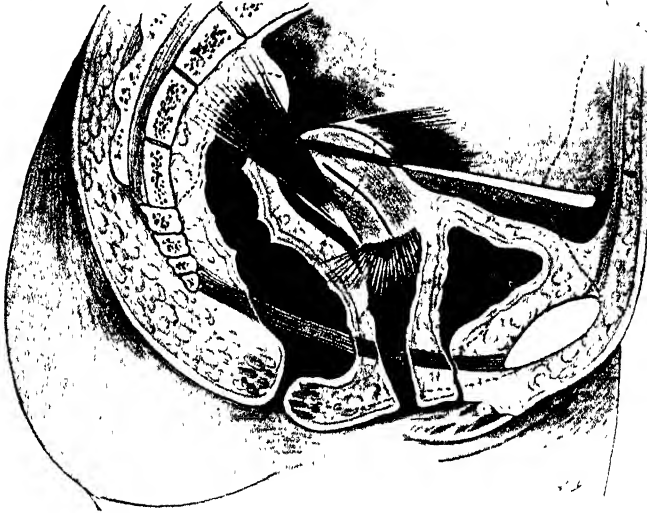
FIG. 152.—YIELDING OF UPPER SEGMENT, CAUSING RETROVERSION.
(Compare with Fig. 27.)
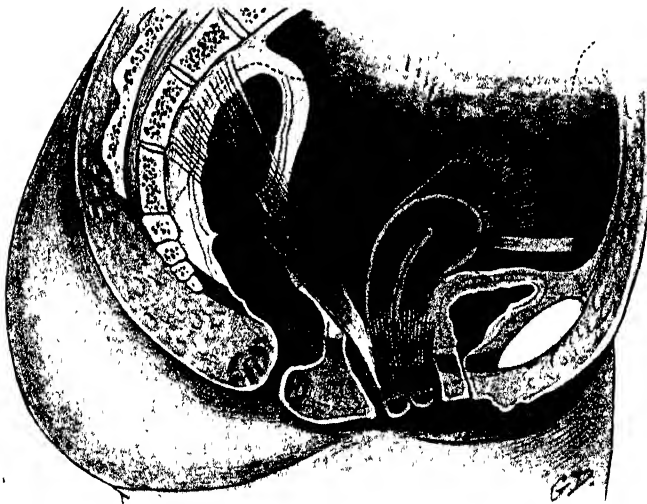
FIG. 153.—YIELDING OF MIDDLE SEGMENT, CAUSING ELONGATION OF
SUPRA-VAGINAL CERVIX. (Compare with Fig. 27.)

divaricated edges of the levatores ani. Thus is produced a cystocele.
The eversion of the posterior vaginal wall is accompanied by a similar
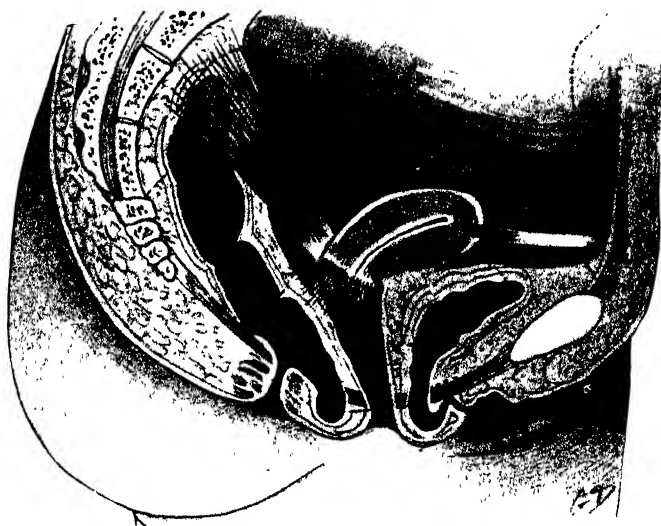
FIG. 154.—YIELDING OF LOWER SEGMENT, CAUSING CYSTOCELE AND RECTOCELE. (Compare with Fig. 27.)
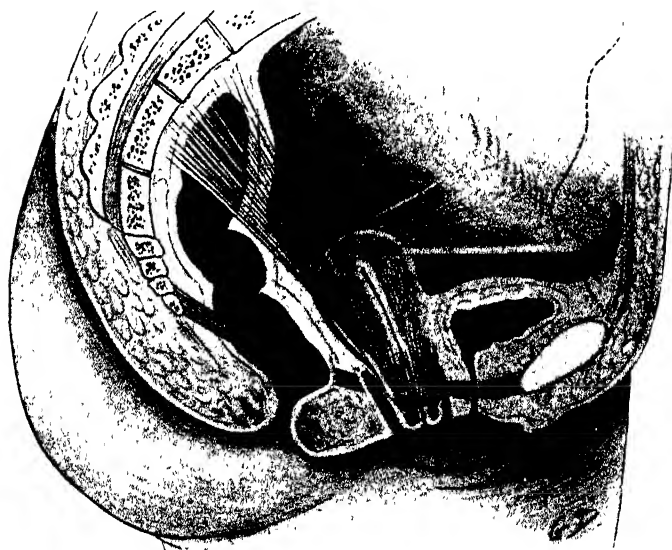
FIG. 155.—YIELDING OF UPPER AND MIDDLE SEGMENTS, CAUSING INVERSION OF VAGINAL VAULT WITH DESCENT OF UTERUS. (Compare with Fig. 27.)

protrusion of the rectum (rectocele) (Fig. 154). Yielding of the lower segment imposes great additional strain on the middle segment.

4. *Yielding of the Upper and Middle Segments* occasions retroversion with inversion of the vaginal vault. As the vault descends the whole uterus comes down with it, because the upper segment has lost its retaining power. Therefore no elongation of the supra-vaginal cervix occurs in these cases (Fig. 155).

5. *Yielding of the Middle and Lower Segments.*—This allows the vagina both to invert and evert ; a great strain is thrown on the upper segment (broad ligaments). In so far as the upper segment resists the strain, elongation of the supra-vaginal cervix occurs. The combined movements may result in the vagina eventually turning inside out
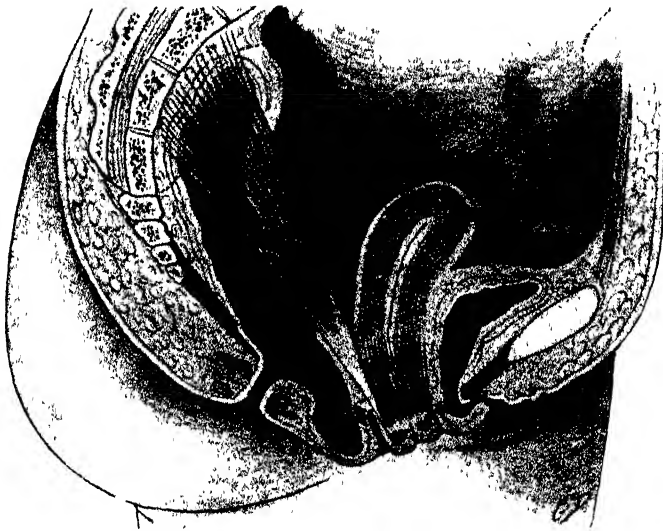
FIG. 156.—YIELDING OF MIDDLE AND LOWER SEGMENTS, CAUSING INVERSION AND EVERSION OF THE VAGINA WITH ELONGATION OF THE SUPRA-VAGINAL CERVIX. (Compare with Fig. 27.)

(extroversion), though this is uncommon until the broad ligaments secondarily yield (Fig. 156).

6. *Yielding of the Upper and Lower Segments.*—This results in a combination of retroversion with cystocele and rectocele singly or together (Fig. 157).

7. *Yielding of all the Supporting Segments.*—This allows the vagina to turn completely inside out (extroversion). The extroverted vagina is accompanied by the whole uterus, the base of the bladder, the anterior rectal wall, and the utero-rectal pouch of peritoneum. This deformity is styled " complete prolapse " or " procidentia of the uterus," but the terms are bad, because they perpetuate the false idea that the uterus is the primary factor in the displacement, whereas its descent is entirely
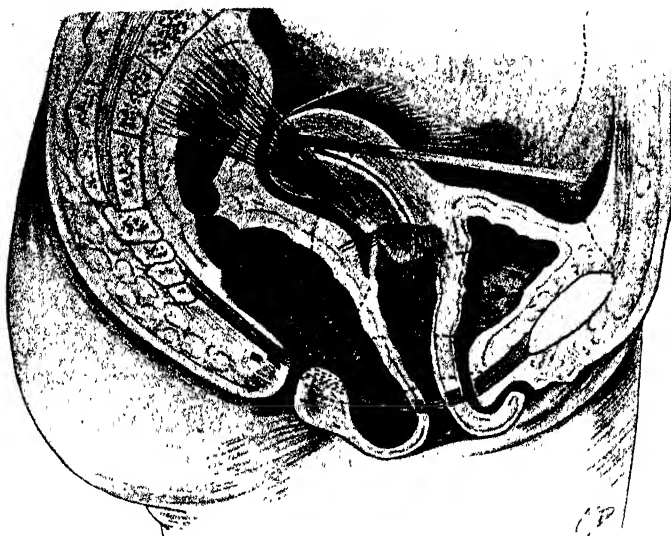
FIG. 157.—YIELDING OF UPPER AND LOWER SEGMENTS, CAUSING RETRO-
VERSION, CYSTOCELE, AND RECTOCELE. (Compare with Fig 27.)
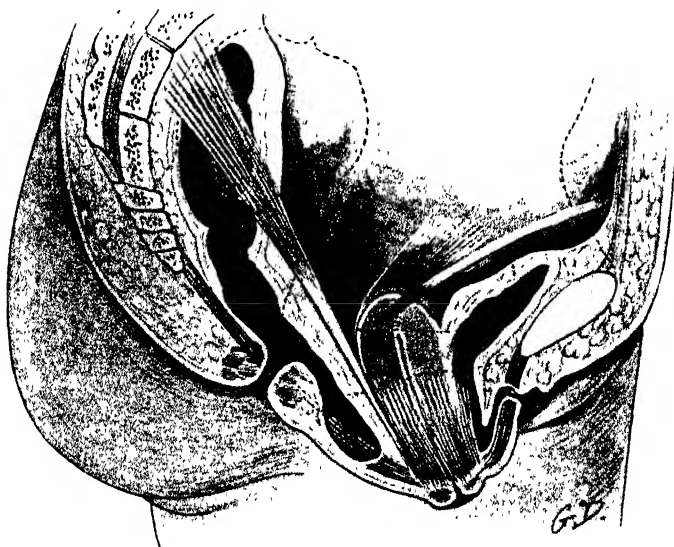
FIG. 158.—YIELDING OF ALL THREE SEGMENTS, CAUSING COMPLETE PROLAPSE.
(Compare with Fig. 27.)

secondary to that of the vagina, and, in fact, the latter turns inside out
much more readily when the uterus is absent (Fig. 158).

In order to test whether inversion of the vaginal vault or eversion of the vaginal outlet is the most prominent or only feature in the displacement, the cervix should be held up with the finger-tip and the patient then made to stand up. In a case of pure inversion holding up the cervix entirely restrains the displacement, whilst with pure eversion it has but little effect. This test is still better applied when the patient has been anæsthetized, the cervix being held in its normal position by a volsellum, whilst by means of another volsellum it is seen how far the anterior and posterior walls of the vagina can be pulled down.

DISTINCTION BETWEEN THE DIFFERENT DISPLACEMENTS.—The distinction between the different displacements is very important if the treatment is to be appropriate to the displacement and not carried out merely on rule-of-thumb lines.

Patients should be examined both in the lying and standing postures, and the relative levels of the uterine fundus, vaginal vault, and vaginal outlet in those respective positions should be contrasted. Further, the movements of the vaginal walls as the patient strains down should be investigated by touch and sight.

GENERAL CONSIDERATIONS AS REGARDS TREATMENT.

Many cases of displacement do not require any treatment, because the deformity does not give rise to any symptoms. In others, again, treatment is not expedient, because, although symptoms are present, other considerations exist which outweigh them.

In the first group may be placed many cases of retroversion and retroflexion which often exist with very slight or no symptoms. Similarly moderate eversion and still more often moderate inversion of the vagina may cause practically no discomfort.

The practitioner should avoid the common error of attributing all sorts of trivial complaints on the patient's part to some displacement of the genital canal, although such displacement may exist. Many of the abdominal pains and backaches for which women seek advice are due to enteroptosis or muscular or ligamentous weakness, and not to the slight displacement of the uterus or vagina which is discovered on vaginal examination, nor does the fact that in some cases the introduction of a pessary alleviates such complaints prove otherwise. One constantly sees patients who protest that they cannot do without the pessary, although investigation shows it to be barely larger than an umbrella ring, and utterly incapable of producing any effect on the supporting mechanism of the canal. The rationale of the result in such cases is on a par with the practice, esteemed by the credulous, of wearing a ring on the finger for rheumatism.

The second group comprises those cases in which pessaries either cannot be retained, are ill borne or are contra-indicated on account of existent vaginitis or neglected habits, and yet operative treatment is inadvisable either because of the patient's physical condition or the probability of child-bearing in the near future.

It is to be noted that the symptoms due to genital displacements are often greatly ameliorated or even apparently made to disappear by simply improving the patient's general health, and hence the practitioner should not be in a hurry to apply local treatment in the slighter cases, but should hold his hand until the effect of such general measures has been tried (see pp. 72 and 96).

Finally, it is to be remembered that when sustentacular laxity is not extreme, great improvement or even cure may ensue in certain cases from simply resting the parts. Thus the early cases of vaginal inversion or eversion, especially when the symptoms declare themselves immediately after the lying-in, should be sent back to bed for several weeks to give time for the relaxed supporting structures to recover themselves.

GENERAL PRINCIPLES OF TREATMENT.

The principles involved in the treatment of sustentacular laxity are expressed in the words *restoration* and *substitution*. Restoration, implying the operative repairs of the relaxed segment or segments of the supporting apparatus, is the ideal proceeding. In undertaking it, however, the surgeon has to deal with structures not merely elongated but permanently altered as regards their resistance and resilience. The sustentacular fault has therefore to be over-corrected. When, however, the laxity is profound, sufficient repair may be impossible, and substitution of the relaxed structures by new supports becomes necessary.

Substitution in general may be effected either by the mechanical device of a pessary or by operative measures. Pessaries act either by putting the relaxed tissues on the stretch and thus tautening them or by actually taking their place. The first mechanism obtains in all self-retaining instruments and has this disadvantage, that by the very tautening it tends to still further stretch the tissues. Thus pessaries are, at the best, but palliative in most instances. The second obtains in the various forms of the stem pessary. Of the many self-retaining pessaries only two need be considered, the ring and the Hodge patterns. The ring is mechanically the most powerful, because its stretching action is exercised all round it, whereas the Hodge principally stretches the posterior vaginal vault and utero-sacral ligaments. The ring, if made of rubber, is the easiest to insert, and the most likely to be retained

when inserted. Its chief drawback is that it is very apt to become foul in spite of every care.

The presence of a pessary in the vagina, whatever its substance and form, tends, as would be the case with any retained foreign body, to produce vaginitis and discharge, and in negligent persons or when vaginitis was present beforehand a very foul condition may be set up. Cup-and-stem pessaries that can be taken out every night by the woman herself and replaced next morning are free of this disadvantage, but, on the other hand, many patients will not tolerate the straps and band necessary to hold them in position.

In general, we are of opinion that pessaries are undesirable instruments. They should certainly never be used in virgins nor, except in necessity or in special cases, in the relatively young and healthy, but should be reserved for patients whose circumstances or physical condition forbid operative measures.

The special cases referred to are those in which there is a prospect of being able efficiently to use them as a temporary retaining device or splint and not as a permanent restraining apparatus. Thus in a limited number of cases of retroversion the temporary wearing of a ring or Hodge may succeed in curing the displacement. Similarly in cases of beginning vaginal inversion or eversion the temporary support of a pessary may allow of the tissues recovering themselves.

The restriction of the use of pessaries is the more to be advised, because the technique of the operation for genital displacement has of recent years been so immensely improved that permanent cure can be almost guaranteed by such means.

THE TREATMENT OF PARTICULAR FORMS OF DISPLACEMENT.

Retroversion and Retroflexion.—TREATMENT OR NO TREATMENT. —The first point to be decided by the practitioner in any given case is whether the displacement is giving rise to symptoms or disability sufficient to make its treatment worth while. The grounds for interference may be that the deformity

Is giving rise to pain (see pp. 97 and 99).

Is accompanied by and appears to bear a causal relation to dysmenorrhœa (see pp. 99 and 431).

Is associated with uterine hæmorrhage or discharge (see p. 53).

Is accompanied by sterility (see pp. 113 and 316).

Is accompanied by and appears to stand in causal relation to repeated miscarriage (see p. 316).

Is the cause of dyspareunia (see p. 108).

PESSARY OR OPERATION.—The next point to decide is whether the case is to be treated by pessary or by an operation.

The general aspect of the treatment of displacements by pessaries has been already touched upon. As regards retroversion and retroflexion in particular, the question as to whether a pessary will have any effect on the deformity has first to be taken into account.

From this point of view there are three groups of cases—

1. Those in which the uterus cannot be moved from its abnormal position.
2. Those in which the uterus can be brought into anteversion, but in which the pessary will not retain it in that position.
3. Those in which the uterus is thus retainable.

In the first group a pessary is painful. These are the cases in which adhesions, usually the result of salpingitis, are present.

In the second group a pessary is useless. The practitioner is strongly advised whenever he has introduced a pessary for backward displacement to examine the patient next day and ascertain if the instrument is having the desired effect. In a great many cases he will find that the uterus has resumed its retroverted position.

In the third group pessary treatment is legitimate. It will be found, however, that such cases form a very small proportion of the total number, the reason being that the deformity is due to laxity of the upper supporting group, on which no pessary has any action.

Given that the uterus can be retained in normal position, the use of the pessary can usually be dispensed with in from three to six months. Which particular type of instrument is used is not of much importance as long as it has the desired effect of putting the utero-sacral ligaments and posterior vaginal vault on the stretch.

In general a ring is the most efficacious and should be first tried. If this fails, a Hodge should be inserted. There are many shapes of Hodge pessary, and the practitioner should select that one which after trial fits the vagina best.

The distinction of those cases suitable for pessary treatment from those unsuitable will rest on the judgment and experience of the practitioner. In many instances the inadvisability of inserting a pessary is obvious, as, for instance, in the cases in which the uterus is palpably enlarged, tender, and fixed, or when definite disease of the appendages can be detected.

In the remainder, the question as to whether the uterus is replaceable or not must be decided by digital examination.

HOW TO REPLACE THE UTERUS.—A retroverted uterus may be replaced either by manipulation or by the use of the uterine sound aided by manipulation. The use of the sound has certain definite dangers. On

account of the leverage it is possible to exercise, adhesions may be broken down, or even a dilated tube ruptured. It is further to be remembered that the uterine cavity is normally sterile, and the passage of anything into it from the vagina almost necessarily infects it. Such infection may not be virulent, but there is always the chance, if the greatest care be not taken, of setting up infective endometritis.

It is not difficult to perforate the uterus with a sound, an accident that may set up violent or even fatal peritonitis. Finally, the sound may be inadvertently passed into a pregnant uterus.

For all these reasons we think that the practitioner will be well advised not to use this instrument, or, if he must, to use it with the
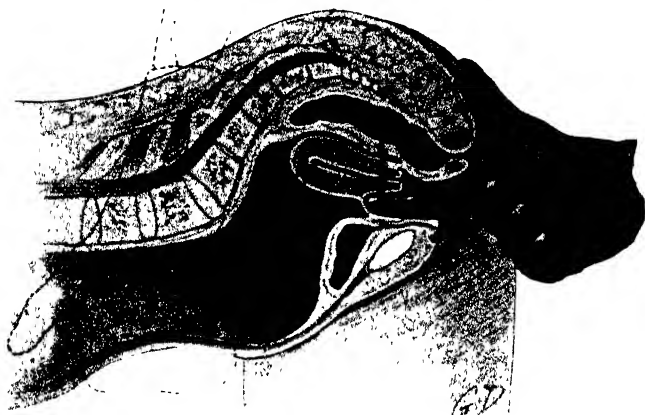
FIG. 159 —SWINGING THE FUNDUS FORWARDS WITH THE PATIENT
IN THE KNEE-CHEST POSITION.

greatest circumspection. As a matter of fact, if the uterus cannot be replaced by manipulation alone, the chance of replacing it by the sound, or of its remaining in proper position, after it has been so replaced, is remote. It is quite possible, on account of the leverage exerted, to prise the uterus forwards with this instrument in spite of adhesions, but such forcible reposition is attended with considerable danger.

Digital reposition is effected thus :—With the patient in the lateral position, the finger-tip is placed on the body of the uterus as felt through the posterior vault. By means of the left hand under the patient's waist, she is then lifted into the knee-chest position. Firm pressure is now made on the body of the uterus until it is felt to move forwards. The finger is then placed on the cervix, and the latter is sharply jerked backwards so as to swing the fundus forwards (Fig. 159). A repetition of

these manœuvres is continued until the axis of the organ is pointing towards the umbilicus.
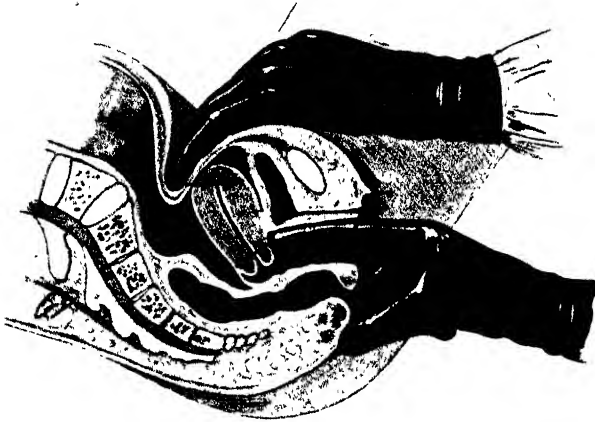
FIG. 160.- MANUAL REPOSITION OF RETROVERTED UTERUS. (SECOND STAGE.)

FIG. 161.— PASSING THE SOUND INTO THE RETROVERTED UTERUS.

With the finger holding the cervix backwards, the patient is now lowered to the side position once more, and f om there turned over into

the dorsal position. The left hand is now applied to the abdomen, and the fundus of the uterus sought for bimanually. When found, the fingers of the left hand should, if possible, be pushed behind and above it through the abdominal wall, and the organ brought forwards into a completely anteverted position (Fig. 160).

If it is not possible to do this, an attempt should be made first to laterovert the organ, and from that position bring it round into anteversion. This final stage of rectification is of the highest importance, for unless the uterus is brought so far forwards that all intestine is expelled from the utero-vesical pouch the chance of its remaining in position is practically nil.

Reposition by the sound, if it be attempted at all, is carried out by first passing the instrument carefully sterilized into the uterus (Fig. 161). The organ is then gently lifted forwards by bringing the handle of the sound backwards until it touches the perineum, and at the same time turning it on its axis so that its point is directed forwards. If any pain is evoked, the manœuvre must be at once abandoned. The sound is now withdrawn and the finger inserted into the vagina, when, with the other hand on the abdomen, the corpus is pressed into complete anteversion, so that its whole length can be felt through the upper anterior vaginal wall. This final adjustment is just as necessary to carry out as when the digital method of reposition alone is used.

FIG 162 – HOW TO HOLD A RING PESSARY.

The uterus having been placed in a satisfactory position, the examiner should wait a few minutes and then examine again, when, if the corrected position be maintained, the insertion of the pessary may be proceeded with.

HOW TO INSERT A PESSARY.—Whether a ring or a Hodge be used, the best way to insert the instrument is with its plane in the horizontal transverse plane of the vagina, i.e. in the position in which it is going to rest.

A ring should be compressed with the hand in the manner shown in Fig. 162, keeping the fingers off the greatest diameter, so that the

FIG. 163.—INTRODUCTION OF THE RING PESSARY.
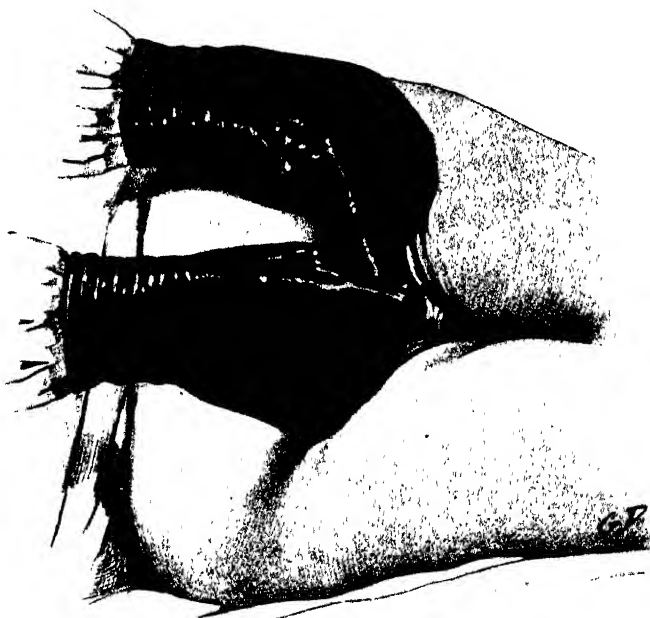
FIG. 164.—INTRODUCING RING PESSARY.

spring of the instrument as it is released will tend to drive it in and not out of the passage. Having been inserted as far as it will go in this manner (Fig. 163), the forefinger of the left hand should be used finally to push it home (Fig. 164), after which the right index finger should be inserted to make sure that its upper edge lies in the posterior fornix (Fig. 165).

With a Hodge pessary the upper end of the instrument should be passed backwards and upwards, and then upwards and forwards, so as to follow the vaginal curve (Fig. 166).

Finally, as with a ring pessary, the index finger of the right hand should be used finally to place the upper end of the pessary in the posterior fornix.

The pessary having been inserted, the patient should, if possible, be examined in twenty-four hours or so, to make sure that the instrument is serving its purpose.

It is most important to instruct all persons wearing a pessary to douche themselves with some mild antiseptic solution twice a day, and to have the instrument changed at least once in three months.

OPERATIVE TREATMENT.—Of the operative measures designed for the cure of backward displacement of the uterus there are only two which can be recommended—shortening of the round ligaments through an incision into the abdominal cavity, and ventro-fixation.

Of these two, shortening of the round ligaments is the most satisfactory, though the results obtained by ventro-fixation have been good. The former operation, however, fixes the uterus in a more correct position, and is not followed by the troubles during pregnancy and parturition which sometimes attend ventro-fixation. The operative details of these two proceedings do not come within the scope of this work, but there are certain questions which the practitioner should be prepared to answer concerning them.

In the first place, as to the risk, it may be said that when carried out by a surgeon expert in this class of work no danger other than that general risk which attends any operation, however slight, is incurred. As regards permanence of result, this is almost assured if the operative technique is correct, even after child-bearing.

The effect on pregnancy and labour may be thus stated :—Shortening of the round ligaments as carried out by the technique we employ has no ill results of any kind. Ventro-fixation is occasionally followed by a good deal of pain at the site of fixation, and a considerable number of cases are on record in which difficulty during labour was experienced.

Such difficulties would appear to be due to some fault in the operative technique, for in our considerable experience we have not encountered them.
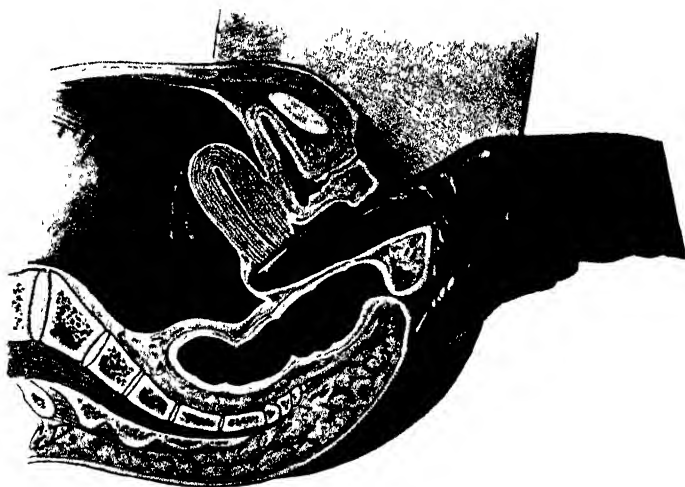
FIG. 165.— ADJUSTING THE RING PESSARY.

FIG. 166.—INTRODUCING A HODGE PESSARY.

In some cases of ventro-fixation the scar at the point of fixation may be permanently tender, and cases of intestinal obstruction due to the intestine becoming kinked round the fixed uterus are on record. Irritability of the bladder may be experienced if the uterus be fixed too low down.

The length of time that the patient will be entirely incapacitated by the operation may be set down as from three to four weeks.

Pregnancy should not be allowed until at least three months after the operation.

Of the two procedures we ourselves strongly favour intra-peritoneal shortening of the round ligaments after the method devised by Barrett.

This operation can be carried out through a transverse skin incision in the pubic hair field, thus avoiding the unsightly scar the vertical incision leaves.

The point is of more than æsthetic importance, for a visible scar tends to keep a patient's mind directed towards the operation she has undergone, which is very undesirable in these cases.

Inversion, Eversion, and Extroversion of the Vagina.—These varieties of so-called " prolapse " may be treated either by a pessary or by operative means, and when a patient presents herself, so suffering, the first point to be decided is which of these two methods the practitioner should employ.

Pessary or Operation.—Generally speaking, it may be said that when the patient is in relatively good health, with a fair prospect of life before her, it is infinitely preferable permanently to cure these displacements by an operation than merely to palliate them by a pessary, with its very definite drawbacks.

There are, however, certain cases in which a pessary is properly employed even in young persons, namely, those slight cases declaring themselves soon after child-bearing, in which there is a reasonable prospect of the supports of the genital canal recovering themselves if their function be temporarily abrogated by an artificial support.

Cases of early inversion of the vaginal vault are those most likely to succeed under such measures. When further child-bearing is an immediate prospect, it is advisable to temporize with a pessary, unless the deformity be very marked or unamenable to such treatment, because parturition is very likely to destroy the surgeon's handiwork and render a repetition of the operation necessary. Enfeebled elderly women are undesirable subjects for an operation unless of necessity, and in such a pessary is rightly given preference.

Finally, the practitioner will meet with patients who refuse to be operated upon, and in whom he has therefore no choice but to employ a pessary.

On the other hand, there are many cases in which pessary treatment is out of the question, either because the instrument cannot be worn, or being worn does not prevent the displacement. Thus, in marked laxity of the pelvic floor with deficiency of the perineal body, no self-retaining instrument may keep in, while in other cases it gives rise to pain or discomfort, or sets up a foul discharge.

Again, certain displacements are not controlled by a pessary, notably many instances of eversion of the anterior vaginal wall (cystocele), and cases of vaginal inversion with great elongation of the supra-vaginal cervix.

In such, an operation is the only resort.

Pessary Treatment.—The ring pessary is that most generally useful for cases of vaginal inversion, eversion, and extroversion, but in some instances some variety of Hodge will be found to fit better.

The chief drawback to pessaries, and particularly to rubber rings, is the foul discharge they tend to set up. This is particularly the case in elderly stout women of the lower classes, whose physique prevents them efficiently douching themselves, and who possess that carelessness as to personal cleanliness which characterizes their order. For this reason we have largely superseded the self-retaining pessary in hospital practice in favour of the stem pessary, which the patient can herself take out and clean every night.

The " butterfly " or Zwancke pessary is a dangerous instrument and should not be employed.

The necessity of douching and having the instrument changed at least once in every three months is even greater than with cases of retroversion.

Operative Treatment.—The operative treatment of these conditions has been enormously improved upon of recent years, and as now carried out by those expert in this branch of surgery, permanent cure can be almost guaranteed.

These operations are highly technical, and no description of them will be entered into here. They have as their aim the restoration of the relaxed supporting structures of the canal, and when this does not suffice their substitution or augmentation by supports artificially constructed.

The particular operation proper in each instance is therefore peculiar to the individual case, and no one procedure can be claimed as a panacea.

Thus, colpoperineorraphy alone may suffice, or this operation combined with anterior colporraphy. In others amputation of the cervix may be needed, with or without tautening of the ligaments of the vault. Ventrofixation is often necessary to hold the vaginal vault in position, whilst in extreme cases all these different procedures may be necessary to produce a good result.

Such extensive proceedings should only be undertaken by those with experience in this class of surgery, for even in such hands they are lengthy, and it is desirable that they should be accomplished under one anæsthesia.

The results are extremely good and permanent, but when the deformity has been profound and the operation necessarily extensive, further child-bearing is undesirable As, however, such patients are usually elderly women the point does not, as a rule, arise.

The risks of the operation, when properly carried out, depend upon its extent, but in general, these may be said to be very slight.

The convalescence necessitates nearly three weeks in bed in order to give time for firm union.

There is one operation which has been carried out for extroversion of the vagina, under a mistaken conception of the nature of the deformity, against which it is right to warn the practitioner, namely, removal of the uterus.

This proceeding is not only futile but actually harmful. The terms " prolapse of the uterus " and " falling of the womb " commonly applied to extroversion of the vagina are misleading and mischievous. The uterus takes no part in the production of this deformity, which is solely due to the vagina turning inside out—a displacement rendered much more easy after hysterectomy.

In old women, in whom marital relations are no longer in question, an easy and effective way of restraining extroversion is to suture the anterior and posterior vaginal walls together in the middle line after the method of le Fort.

Inversion of the Uterus.—The treatment of chronic inversion of the uterus should be begun by keeping the patient in bed, with the foot of the bed raised. The bowels should be kept acting very regularly, and the general condition of the patient should be attended to, so that if she is anæmic from the hæmorrhage the proper remedies should be prescribed.

Locally, the treatment consists in relieving the congestion of the uterus as much as possible by hot vaginal douches and a mixture containing ergot. The douches should be antiseptic in nature, so that the uterus may be as healthy as possible before reduction is attempted. This treatment should be continued for at least a week, as it has happened in our practice on two occasions that, with these simple measures, the uterus has reinverted itself.

If reinversion has not taken place, a manual attempt may be made to reduce the inversion with the patient under an anæsthetic. If this fails, an Aveling's repositor will have to be fitted ; but as the size of uteri differ, it is best to take a cast of the inverted portion with soap, and then to have a cup turned to the same size. Success will be much more likely to

follow if this is done. After Aveling's repositor is fixed, it will take about twenty-four hours or a little longer to effect the reduction, and during this time the patient will probably have to be kept under the influence of opium, as the treatment is painful.

If this treatment fails, the displacement can be reduced by an operation, or the uterus can be removed.

THE TREATMENT OF DEFORMITY OF THE CERVIX.

Absence and Atresia.—Congenital absence or atresia of the vaginal cervix only requires treatment when, as the result, retention of menstrual fluid in the uterus occurs (see p. 292).

The vaginal cervix may be absent on account of operative removal or septic necrosis. No treatment is required unless stenosis of the cervical canal has been caused thereby, when in most cases it will be necessary to remove the uterus. Dilatation of the canal may be tried, but if there is much cicatricial tissue the effect is not likely to be permanent.

As a result of sloughing, or the application of strong chemicals, some part of the cervical canal may be obliterated. The treatment depends on the extent of the obliteration. Thus, if the whole canal is closed, removal of the uterus will be necessary. If, however, only the external os is affected, with dilatation of the cervix above it by retained menstrual blood (hæmato-trachelos), the os should be reopened by incision, and after the retained fluid has been evacuated the cut edges should be united by suture to the mucosa lining the cervical canal, so as to prevent a return of the deformity.

Elongation and Hypertrophy.—Two forms of elongation of the cervix are described—

1. That of the supra-vaginal portion, which is due either to the traction of the inverting vaginal vault, or to growth in it of a myoma or carcinoma.

2. That of the vaginal portion, which is either congenital, inflammatory, or neoplastic in nature.

Acquired elongation of the vaginal cervix is practically always associated with a general hypertrophy.

The treatment will depend upon the portion of the cervix affected and the underlying cause.

Thus supra-vaginal hypertrophy will have to be dealt with in the manner described in the sections dealing with displacements of the genital canal (see p. 346), cervical fibroids (see p. 326), and cervical carcinoma (see p. 370), according as to which of these conditions the elongation is due.

Acquired elongation and hypertrophy of the vaginal cervix is properly treated by amputation if it is simply due to chronic cervicitis. When caused by myomatous or carcinomatous growth, the treatment proper to these conditions must be carried out.

Congenital elongation of the cervix may be discovered accidentally. In such cases treatment is not required. In others, however, the deformity may be associated with dysmenorrhœa or sterility, or may even have become so marked that the cervix protrudes like a polypus from the vaginal orifice.

In such, the proper treatment is amputation, after a preliminary dilatation of the canal.

Laceration of the Cervix.—Laceration of the cervix not giving rise to any symptoms does not require treatment. In such cases it will be found that the inner surface of the cervical lips are covered with a firm, squamous epithelium like the rest of the cervix.

When, however, the deformity is associated with diffuse hypertrophy and elongation unpleasantly apparent to the patient, or with leucorrhœal discharge, whose origin is an erosion affecting the inner surface of the lips, treatment is required, particularly in the last circumstances, because the combination of laceration and chronic cervicitis and erosion is a menace of carcinoma.

There are two methods of treatment. The first consists in freshening the edges of the old laceration or lacerations and bringing them together by sutures (trachelorraphy), the second in amputating the redundant lips and suturing the mucous membrane covering the outer surface to the mucosa lining the cervical canal. Trachelorraphy has these disadvantages, that when chronic cervicitis and leucorrhœa exist the operation only removes part of the diseased area (the eroded lacerations), so that as a cure for the discharge it is commonly a failure. Moreover, the effect of the operation, if much hypertrophy is present, is to make a very long cervix, which may continue to bother the patient. Amputation by removing entire the eroded area and a large proportion of the hypertrophic cervical glands is very successful in relieving discharge, whilst its superiority, if much hypertrophy exists, is obvious. Its drawback is said to be that it lessens the chances of further pregnancy and tends to abortion.

Of the two operations we think that amputation is usually to be preferred.

THE TREATMENT OF INFLAMMATION OF THE CERVIX.

Septic and Gonorrhœal Cervicitis.—Cervicitis may be either acute or chronic. Acute cervicitis rarely occurs by itself, but is usually associated with vaginitis, vulvitis, and sometimes with endometritis.

Its treatment therefore will be considered in connection with acute vaginitis (see p. 377).

Chronic cervicitis, on the other hand, usually occurs alone, no other part of the genital canal being inflamed. As has already been explained, its leading symptom is leucorrhœa and its outward and visible sign an erosion.

Its treatment may be considered under the heads of—

1. Douching.
2. Local applications, and
3. Operative measures.

Douching.—It is obvious that it is impossible for a vaginal douche to reach the cervical canal in quantity sufficient to influence the mucous membrane lining it. Nevertheless, vaginal irrigation is effective to the extent that the fluid is brought into direct contact with the surface of the erosion, that by the heat applied a certain degree of favourable reaction in the part of the tissues is tended to, and that the discharge accumulated in the vagina is washed away, and bacterial growth in that situation is more or less inhibited. Any of the douches mentioned on page 297 may be used to these ends, but the most generally serviceable of them is that made with tannic acid.

Applications to the Cervix.—Many substances may be applied to the cervix—nitrate of silver, chloride of zinc, carbolic acid, nitric acid, and iodized phenol. Of this list that most generally used is iodized phenol (pure carbolic acid 4 parts, iodine 1 part). The applications should be made through a speculum by means of wool mounted on a Playfair's probe or narrow-bladed forceps with the cervix well exposed. The probe should be passed into the cervix only one inch, unless it is desired to treat the corporeal endometrium as well. Before making the application all mucous discharge covering the erosion and lying in the cervical canal should be removed as far as possible. The erosion in particular should be thoroughly treated.

In gonorrhœal cases one of the organic silver salts, such as protargol (10 per cent.), is usefully applied in this way, but care must be taken to avoid infecting the uterine cavity by not passing the probe above the internal os.

The frequency with which the application requires to be made varies in different cases. As a rule, to begin with it may be repeated twice a week, but after a week or two once every seven days is sufficient. There is no doubt that in a certain number of cases great improvement or even cure follows a series of such applications.

The method, however, is a lengthy one, treatment needing to be continued for a couple of months as a rule.

Radium.—Good results have been claimed. Our experience is at

present very limited, but it is worth a trial in obstinate cases of chronic gonorrhœal or septic cervicitis.

Operative Measures.—The cure of chronic cervicitis and cervical erosion is best achieved by operative means. To this end there are two procedures—curettage and amputation of part or whole of the vaginal cervix. Curettage is best suited for cases of granular erosion without marked cervical laceration. It is important to remember that, owing to the dense matrix in which the glands of the cervix are embedded, nothing short of a strong sharp scoop will suffice to ablate them.

Amputation of the vaginal cervix either in part or whole is of course the most certain means of dealing with a case of chronic cervicitis. It is to be adopted in cases with profuse and persistent leucorrhœal discharge associated with advanced erosion, and particularly when the cervix is markedly lacerated or hypertrophied.

For stopping profuse leucorrhœal discharge it is by far the most efficient measure, and it is the more indicated in those cases in which cervical laceration is complicated by an erosion menacing carcinoma.

Tubercular Cervicitis.—This rare condition should be dealt with either by high amputation of the cervix or total hysterectomy according as the cervix alone or the corporeal endometrium as well is the seat of the tuberculosis.

Syphilitic Cervicitis.—This extremely uncommon type of syphilitic infection is to be treated in the manner proper for syphilitic infection in general. Amputation of the cervix is not indicated.

THE TREATMENT OF INNOCENT GROWTHS OF THE CERVIX.

Cervical Cysts.— Small multiple cysts of the cervix due to chronic cervicitis require the treatment of their cause. Their presence in large numbers is an additional indication for the amputation of the diseased part.

Large single cysts should be removed together with the involved portion of the cervix.

Cervical Myomata.—The treatment of a myoma growing from the cervix depends upon its position and size. When originating in the supra-vaginal portion its removal, as a rule, is to be carried out through an abdominal incision.

Those growing from the vaginal cervix should be removed through the vagina. The exact method of doing this varies in different cases.

Many of these tumours are polypoid, and as such can be simply twisted off; or if the pedicle be too thick to allow of this being done, then it may be severed with scissors, or the capsule of the tumour opened, the fibroid enucleated, and the pedicle and capsule subsequently removed.

Fibroids growing from the vaginal cervix may at times attain a great size, entirely filling the vagina, so that their exact origin may be a matter of doubt until after they are in process of removal. In such a case the most usual method of removal is by "morcellement," the tumour being removed piecemeal with scissors until sufficiently reduced in size to allow of its origin being ascertained, when its pedicle, if it has one, may be divided, or if the tumour be sessile, the portion that remains may be enucleated.

Sessile tumours smaller than this should be enucleated whole after incision of their capsule.

Fibroid polypi that have come through the cervix and are hanging in the vagina are removed either by torsion, evulsion, by dividing the pedicle by scissors, by enucleation, or by morcellation if the pedicle cannot be reached.

Fibroids presenting at the external os but still lying in the cervical canal may be removed through the vagina if small and apparently not growing from the body of the uterus.

In some of these cases, however, the mass felt at the external os is obviously only the lower pole of a tumour which fills the whole uterus.

In such, the question of abdominal removal must be considered, and this route is the more particularly to be chosen if other fibroids are probably present and the case is not a septic one.

The treatment of a sloughing fibroid endeavouring to extrude through the cervix is a problem that requires careful consideration if the mass be large or if the uterus be enlarged by other fibroids as well. These patients are usually very ill, and in a state of acute septic intoxication, so that the least severe procedure compatible with efficiency should be chosen. As a rule the removal of the soft broken-down tumour by the vaginal route is easy, the operation being in all respects similar to the removal of retained and septic products of abortion or miscarriage.

If sub-peritoneal or interstitial fibroids are found to be present in the uterus after the removal of the necrotic mass, it is in our experience best to leave them if signs of peritonitis are not present, for hysterectomy is fraught with risk under the septic circumstances. If, however, symptoms and signs of peritonitis are present, these show that the whole uterine wall or one of the fibroids in it is gravely infected as well, and in such circumstances the surgeon has no choice but to remove the uterus. Hysterectomy carried out for such a grave condition naturally has a greater mortality.

Mucous Polypus.—A mucous polypus is usually best removed by twisting it off or by cutting it away with scissors. As mucous polypi are usually the outcome of chronic endometritis or endocervicitis, these conditions all need to be treated as well. In many cases the exact site

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of origin of the polypi cannot be ascertained until the cervix has been dilated.   Cystic polypi are similarly treated.

THE TREATMENT OF MALIGNANT DISEASE OF THE CERVIX.

Carcinoma of the Cervix.—The treatment of carcinoma of the cervix depends upon the degree of advancement of the growth.

Operative Treatment.—The practitioner, therefore, when confronted with a case of cervical carcinoma has first of all to determine whether operative removal with a fair chance of success is possible or not.

The following remarks are offered to assist him in making this important decision.

Within the last twelve years the prognosis of this distressing disease has been greatly improved, chiefly by the introduction of the radical extirpation.

Radical Hysterectomy.—The modern surgical treatment of carcinoma of the cervix consists in removing through an abdominal incision the uterus and its appendages, the upper half of the vagina, the parametric and paravaginal tissue up to the lateral pelvic wall, and the glands situated along the iliac vessels and in the obturator fossæ.

The operation is a severe one, and is attended with an immediate mortality that varies according to the class of case dealt with, and the thoroughness with which it is carried out.   The immediate risk in any particular case depends upon the state of the patient and the advancement of the growth.   Thus women over 60 stand the operation badly as a rule, and great obesity, by rendering the surgeon's task more difficult, makes it more dangerous.

Advanced growth not only depreciates the patient's resisting powers but makes the operation more difficult and prolonged.   Its most serious effect, however, is the increased chance of infection of the operation area, for breaking down and stinking growths usually contain a virulent strain of streptococci.

No general operative mortality rate is applicable to individual cases, but speaking roughly, it may be said that when the growth is relatively early and the patient's state good, the death rate is about 5 to 7 per cent. ;   when the growth is moderately advanced, about 15 per cent. ; and when the growth is extensive and of old standing, about 20 per cent.

The fatalities are usually due either to shock or post-operative sepsis. Against the definite immediate risk of the operation has to be set the fact that the ultimate results in the event of recovery are extremely good as compared with those of carcinoma in other situations.   This is due to

the fact that when carcinoma affects the cervix, metastatic growth takes place less quickly and less frequently than in any other situation. Even in patients dying from the disease unoperated upon, less than 50 per cent. present metastatic growths post-mortem.

As with the immediate mortality rate of the operation, no general " cure rate " is applicable to individual cases, but it is certain from the statistics of surgeons who have performed a large number of these operations that on the average about 50 per cent. of those recovering remain permanently free of the disease. Obviously the earlier the case is dealt with the better the patient's chance of being cured, and *vice versa* ; but even in cases in which the iliac glands are carcinomatous at the time of the operation, the outlook is by no means hopeless. We have at present a good many patients who had disease as advanced as this alive and well more than five years after their operation.

Recurrence when it takes place usually affects the tissues in the upper part of the pelvis, the bladder, rectum, or aortic glands. Return of the growth in the remaining portion of the vagina is uncommon.

The limitations of the operation depend principally on the degree to which the growth has involved the bladder and ureters. It is true that the involved portion of the bladder can be removed, and a part of one or even both ureters resected ; but our experience of such drastic steps is that it is only in a few cases that they are worth while, for apart from the probability of recurrence in any circumstances in such advanced disease, the likelihood of a ureteric or vesical fistula opening into the vagina is very great.

When, therefore, the growth has advanced to such a degree that it cannot be removed without exsecting a considerable portion of the bladder, the operation should be abandoned. Resection of a portion of one ureter is a lesser proceeding, and when on other grounds the growth is removable, such cases may be proceeded with, but removal of portions of both ureters is not to be advised.

Involvement of the rectum occurs very late in the disease, and by that time the bladder is usually involved. Extension outwards into the broad ligaments does not prevent removal unless it is extreme, nor does downward growth along the vaginal wall so long as the bladder and rectum are uninvolved.

From the clinical standpoint, then, the most important fact for the practitioner to determine is whether or not the bladder is involved. Particular attention should be paid to the length of anterior vaginal wall that intervenes between the lower border of the growth in front and the vulval outlet. If the growth has not extended on to the vaginal wall, this will be the normal length of that wall—namely, $2\frac{3}{4}$ inches. When the distance is less than this, it implies that the growth has extended into

the anterior vaginal wall; and the more this is so, the more likely is it that the bladder is infiltrated. We would draw attention to a common error in these cases; namely, the mistaking of the sharp raised lower edge of the growth for the margins of the external os. This raised edge is so marked in some cases that the mistake is easily made unless attention is directed to the length of the anterior vaginal wall (see Figs. 167, 168).
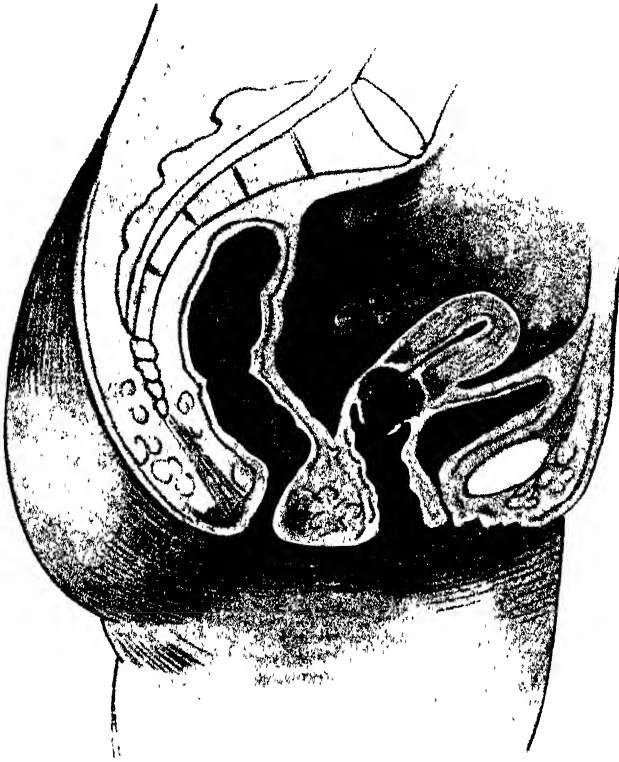
FIG. 167.—CARCINOMA OF THE CERVIX LIMITED TO THE CERVIX. ANTERIOR AND POSTERIOR VAGINAL WALLS NORMAL IN LENGTH.

The presence of bladder symptoms—frequency, pain, pyuria, or hæmaturia—should also be made the subject of investigation.

As regards fixity of the uterus, less importance may be given to this sign than formerly. In many instances in which on clinical grounds such fixity might be deemed due to extension of the growth into the paracervical tissue, it turns out on opening the abdomen to be really due to salpingitis and adhesions—indeed, in the more advanced cases some degree of inflammation of the uterine tubes is nearly always present.

Backward extension may be tested for by rectal examination, and if the bowel wall be involved, it will be discovered in this way.   In a good number of the more advanced cases a degree of latero-flexion is produced.   This signifies that either a pyometra or pyosalpinx is present—both conditions being quite common with carcinoma of the cervix. Their presence of course makes the outlook less favourable.

It is most important, however, to bear in mind that in quite a number
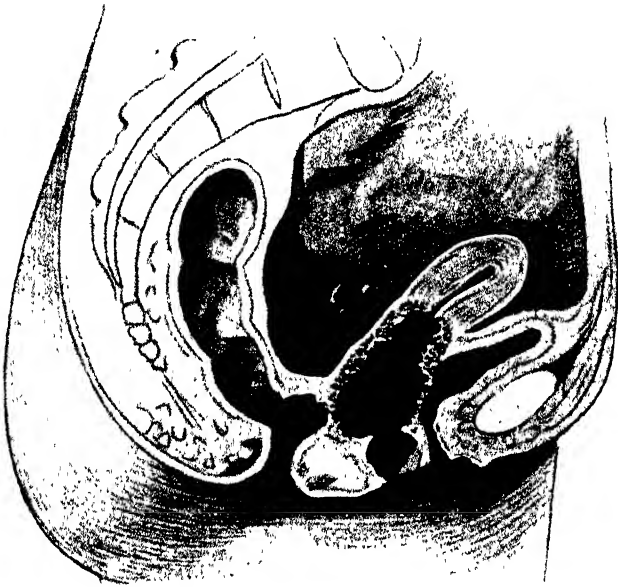
Fig. 168.—Carcinoma of the Cervix involving the Vaginal Walls.   Note the sharp lower edge of the growth simulating the Cervix.

of cases the question of the removability or not of the growth cannot be settled by ordinary clinical examination.   In such an examination under an anæsthetic may permit of a decision.

If this method also fails, the proper course is to open the abdomen and tentatively proceed with the earlier steps of the operation.   If the bladder can be separated it will almost certainly be feasible to finish it. If this is impossible, the parts should be restored by sutures as far as possible and the parietal wound closed.   These abandoned cases generally made a good recovery.

Together with the clinical signs the practitioner must take into consideration the age and physical strength of the patient, estimating from the former the relative degree of severity of the operation, and from the latter the patient's capability of undergoing it.

Other Operative Procedures.—Carcinoma of the cervix may be removed by the vaginal route. Simple vaginal hysterectomy is only applicable to very early growths. The operation is relatively simple and has a very low mortality, but on the other hand is followed by early recurrence in the vaginal vault in most cases.

A more radical vaginal procedure, devised by Schauta, whereby the whole of the vagina is removed with the uterus, gives much better ultimate results and is applicable to a wider range of cases. It is almost as severe as extirpation by the abdominal route, and is inferior to it except in very stout patients, in whom the operation by the latter route may become most extremely difficult.

PALLIATIVE MEASURES.—The palliative treatment of irremovable carcinoma of the cervix consists in the alleviation of pain, hæmorrhage and foul discharge, and in checking the rate of the growth.

Irradiation.—Great caution must be observed in appraising the results of radium in carcinoma of the cervix in view of the extravagant claims that have been made in its favour. The outcome of our now very considerable experience is as follows :—In the majority of cases the rate of growth is retarded, and in a few markedly so. The tissue becomes extremely indurated, the vaginal vault puckered or drawn, and hæmorrhage and discharge may, for a time, entirely cease. Its effect on the pain is uncertain. In some cases it is undeniably greatly increased owing to the dense fibrosis set up, and we have known patients refuse further applications on this account. Others, however, state that they have been relieved. Its greatest drawback is the frequency with which rectal or vesical fistulæ follows its use. In every one of our cases in which the growth presenting into the vagina apparently disappeared a recurrence was obvious in a few months. Radium may be applied to the cervical growth by placing it in the cervical canal but better by inserting it into the substance of the growth. The dosage to be given and the length of the application and the screenage are still in the experimental stage (see p. 400). In general it may be said that cases with marked ulceration and excavation are the most favourable for radium treatment. In those cases in which massive induration is present, and especially when it is associated with constant pain as is usually the case, radium, as a rule, usually increases the patient's distress. X-rays have also been advocated (see p. 399).

Pain.—For the pain, the best drug to begin with is aspirin in 10-grain doses taken as occasion demands. It will be found that the sufferings of

these patients are not continuous at first, but that good days alternate with bad days, and that by judiciously withholding the drug when not needed so as to prevent them becoming habituated, the duration of its usefulness will be much prolonged.

When aspirin fails phenacetin should be tried or some other of the various analgesics—all of them, however, when long continued have a more or less depressing effect.

Opium and its derivatives should be reserved to the last and should always be given with judgment, for unnecessarily free use reduces the patient to a condition of fretful misery, with absolute loss of courage and self-control. Different individuals react differently to its use, and it is here that discrimination is particularly to be desired.

Bleeding.— Severe bleeding occurs in some cases, but rarely sufficient to kill the patient. It is best checked by a hot douche (temp. 120° F.), and if this fails, the vagina should be plugged. With a view to checking the rate of the growth and the bleeding, ligation of the internal iliac and ovarian arteries has been carried out. The operation is not a difficult one, and no ill results have followed it on the occasions when we have performed it. On the other hand, we have not been able to satisfy ourselves that it has any effect on the growth commensurate with the magnitude of the procedure employed.

Discharge.—For foul discharge, douches must be used. That most generally serviceable in diminishing this factor is crude " Sanitas," four drachms to a pint of warm water. Frequent warm baths should be taken as long as the patient's condition allows it. The best method of " cleaning up " a foul case is to administer an anæsthetic and with a sharp spoon scrape away as much of the growth as possible, or if of the fungating type to cut it away with scissors, after which the vagina should be soaked in " violet green " and plugged with gauze for twenty-four hours.

A still more searching method is the actual cautery applied freely until as much of the growth is destroyed as possible. Its use is followed by continuance or even accentuation of the foul discharge for some days until the sloughs separate, after which, especially in some cases, there is for a while a very marked improvement of the patient.

In scraping, and particularly in applying the cautery, considerable care must be observed not to penetrate or cause injury to the walls of the bladder or rectum. Instead of using the cautery, pure acetone may be applied through a Fergusson's speculum. It certainly cleans up the growth, but is productive of much pain.

In the last stages, when incontinence of urine and fæces is present, the greatest care must be taken that the patient does not develop bedsores. The back must be kept as dry and clean as possible, and a water bed or water cushion employed.

Sarcoma of the Cervix.—This very rare disease requires the same treatment as carcinoma. It often assumes a polypoid form, a fact to be remembered when a polypus of unusual consistence and character is discovered growing from the cervix.

THE TREATMENT OF DEFORMITIES OF THE VAGINA.

Congenital Absence.—It is possible to construct an artificial vagina by transplanting a segment of the ileum between the bladder and rectum after separating these two structures. This operation, devised in America by Baldwin, has now been performed a considerable number of times with success, the new vagina remaining patent and efficient for sexual intercourse. We have performed it on one occasion with this satisfactory result. All the recorded cases have recovered, but that a definite risk attaches to the operation is obvious.

The practitioner called upon to deal with a patient exhibiting this deformity will have to decide whether he is justified in suggesting to her this operation, for no lesser measure will give a satisfactory result.

As far as the ethical aspect of the operation is concerned we are of opinion that its performance in certain circumstances is fully justified, for that married life may be happy and useful though the wife is obligatorily sterile is a matter of common experience.

It is important to bear in mind that in many of the women the subject of this deformity the ovaries are undeveloped and the sex-sense wanting. In such circumstances intercourse though rendered possible is not likely to be satisfactory, hence before carrying out the operation the fitness of the patient in this respect should be ascertained as far as this may be possible. The sufferers from this deformity may be divided into three classes—(1) children, (2) unmarried girls, and (3) married women.

CHILDREN.—In children it is obvious that the construction of an artificial vagina is wholly unjustifiable.

UNMARRIED GIRLS.—In unmarried girls the propriety of suggesting the operation will depend on the circumstances of the case. In the larger number the deformity is giving rise to no symptoms, either physical or mental, and is only discovered when the patient seeks medical advice because the menses have not appeared.

In such no operation is proper, though the state of affairs and the possibility of partly overcoming the disability of the deformity should be explained to her or to her parents.

In other cases, however, the patient presents herself either because she is suffering pain from menstrual retention in the uterus or because marriage is in contemplation.

Hæmatometra is a rare complication, because in most instances of congenital absence of the vagina the uterus is absent as well. In such an event it will probably be necessary to perform hysterectomy, but occasions may possibly occur in which it would be feasible to construct an artificial vagina out of intestine and implant the uterus into it, though it has not yet been accomplished. If marriage is in contemplation, the nature of the operation, its risk, and limitations should be explained to the interested parties, when, if a consensus of opinion in favour of it is arrived at, it may be justifiably performed. In a patient thus operated on by one of us the knowledge of her deformity had produced mental depression bordering on melancholia.

MARRIED WOMEN.—When marriage has already been entered upon, the justifiability of performing the operation depends upon the degree to which the patient desires it after its risk and limitations have been explained to her. When the sex-sense is normally developed and the woman wishes it done on this ground as well as to satisfy her husband's desires, it is rightly carried out. Where, however, the woman asks for it solely under pressure of her husband, she herself not desiring it, the practitioner who advises it and the surgeon who performs it are taking on themselves a very grave responsibility.

Atresia of the Vagina.—The commonest type of atresia of the vagina is the so-called "imperforate hymen," in which the canal has failed to open into the urogenital sinus. The proper treatment is division of the septum occluding the entrance to the canal.

The operation needs to be carried out with the strictest antiseptic precautions, for infection of the blood-distended vagina may extend upwards and give rise to suppurative salpingitis, especially in those cases in which the uterus and uterine tubes as well as the vagina are distended.

The operation is a simple one, the bulging septum being simply divided with a scalpel in a cruciform manner and the thick fluid allowed to drain away. If the vagina is alone distended, as is most often the case, subsequent douching will do no harm, but if the uterus has also been distended it is better not to douche for fear that the fluid should find its way into the uterine tubes and peritoneal cavity.

Septa situated higher up the vagina are sometimes found, and are to be treated by incision in a similar manner.

Acquired Deformities.—The treatment of prolapse of the vagina, including cystocele and rectocele, is dealt with elsewhere (see p. 346).

THE TREATMENT OF VAGINITIS.

Acute Gonorrhœal Vaginitis.—Acute gonorrhœal infection of the vagina is invariably accompanied by similar infection of the cervical

canal and urethra, and treatment to be complete must attack the disease in all these sites.

If a good result is to be obtained, treatment must be vigorously applied.

Unfortunately, in certain of these patients the necessity for concealing their condition prevents or renders them unwilling to adopt this course. Thus from inefficient treatment the disease is prolonged or rendered chronic, while the risk of extension to the uterus and uterine tubes is greatly augmented.

The patient should be kept in bed and the vagina irrigated every four hours with saline solution, or, better still, continuous irrigation applied. Once a day a speculum should be introduced and the whole vaginal wall carefully swabbed with a solution of one of the organic silver salts, such as protargol (10 per cent.), and the same should be applied to the interior of the cervix by means of a Playfair's probe. Great care must be taken in carrying out this latter proceeding not to pass the probe above the internal os. Once a week iodized phenol may be applied to the cervical endometrium in lieu of the protargol. The urethra will also require treatment with protargol, the drug being applied by a small probe wrapped round with wool.

In the department for the treatment of venereal disease at the Middlesex Hospital various methods have been tried with the object of quickly destroying the infecting organism. Flavine, brilliant green, and chrystal violet in strong solution (1 per cent.) have been applied directly to the cervical canal and the surface of the vagina, and ionization has also been tried. The results have been disappointing in so far as any great improvement in the time taken to cure the disease is concerned.

Were the infection limited to the vagina any antiseptic would soon destroy it, and particularly those belonging to the aniline group, whose non-irritating properties allow of their being applied in high concentration. But the problem of how to expel from or kill *in situ* the organisms in the cervical glands is as yet unsolved.

Our experience amounts to this : that, as at present used, all antiseptics give much the same results, and that amelioration in the condition is less due to them than to the natural course of the disease, the acute stage of which spontaneously abates after a few weeks.

The chronic stage is then entered into. This may be quite short, entire recovery ensuing in a week or two—more commonly, however, it lasts a long time, months or even years. Bacteriological examination during this stage usually fails to disclose the gonorrhœal origin of the condition, streptococci and diphtheroid bacilli being the organisms usually found.

It is, however, to be remembered that these organisms are quite capable of being transferred from individual to individual, so that a man whose

chronic urethritis was the outcome of gonorrhœa contracted perhaps several years ago, might give his newly married wife acute streptococcal vaginitis. Moreover, it is probable that gonorrhœa may remain so deeply sequestered in the cervical gland tubules, and the recesses of Bartholin's glands, that under ordinary conditions they cannot be found by bacteriological examination, and only come to the surface when the glands very actively secrete under the stimulus of sexual excitement.

If the external genitals are swollen and painful, warm boric fomentations are comforting and useful. The patient should be kept in the reclining posture, so as to promote drainage from the vagina.

Before any remedial measures are begun, a specimen of the discharge should be submitted for bacteriological examination, with a request to the bacteriologist to preserve the cultures in case a vaccine is required.

If the treatment described above is properly carried out, a very marked improvement is usually manifested in a week, after which the douches may be reduced to three times a day and the applications to once every other day. The progress of the case may be checked by making a weekly examination of the discharge for the presence of gonococci.

The internal administration of drugs has obviously but little scope in women, but it is usual to prescribe sandalwood and cubebs in the same manner as in men. Probably they tend to improve the urethral inflammation and to diminish the tendency for the organisms to spread into the bladder.

In the event of cystitis the viscus must be washed out with boric-acid solution twice a day, and urinary antiseptics such as salol, urotropin, or cystogol are indicated. The greatest difficulty arises in those sad cases in which infection has occurred in a young girl or child as a result of incomplete intercourse, for in such the presence of the almost intact hymen, acutely inflamed and exquisitely tender, is often an absolute bar to efficient local treatment. In these unfortunate girls the pus becomes more or less pent up in the vagina partly by reason of the hymen and partly on account of the spasmodic vaginismus set up. As a result of this, and also because the virgin mucosa is less resistant than in women who have borne children or are well accustomed to intercourse, the disease runs a violent course and is very intractable. In young children this is particularly the case, for in them it is impossible to gain access to the cervix, and thus whatever benefit the vagina may receive from antiseptic douches or applications is rendered nugatory by constant reinfection from the cervical canal.

Tenderness of the vaginal orifice and vaginismus may be partly overcome by the use of 10 per cent. cocaine applied on a swab or by a suppository. In very bad and urgent cases it may even be necessary to put the patient under an anæsthetic and stretch or actually enlarge by

incision the vaginal orifice. If this is done, a couple of rubber tubes should be inserted and kept *in situ* through which frequent or continuous irrigation may be carried out.

In children similar measures may be employed in the acute stages of the infection. In these also it is important to preserve the external skin from soreness and excoriation as much as possible, and to this end frequent warm baths are useful, after which the external parts should be carefully dried and then freely smeared with some simple ointment (a mixture of oxide of zinc and castor oil is efficient for this purpose) and then a piece of well-smeared lint should be placed between the labia.

It goes without saying that the person to whose lot it falls to irrigate and dress the inflamed parts should exercise the most scrupulous care lest her eyes become infected, and it is most important that the patient should be warned of the danger of conveying the virus to her own eyes. In the case of children the arms had better be restrained so that touching the genitals is impossible. The protection of the other occupants of the house from conveyance of the infection has also to be seen to. This is particularly urgent in the case of infantile gonorrhœa—unfortunate instances of epidemics affecting a number of children in an institution being on record. In the case of an adult the infectivity of her condition and the necessity of keeping separate her bath, bathing appliances, towels, diapers, and linen should be explained to her.

Chronic Gonorrhœal Vaginitis.—Many cases of acute gonorrhœal vaginitis pass into chronicity usually on account of inefficient treatment or no treatment at all. On the other hand, the disease may never have been acute at any period.

It is to be remembered that the gonococcus lingers in the cervical canal, the ducts of Bartholin's glands, and urethra long after all traces of vaginal inflammation have disappeared, and from these harbourages constantly tends to reinfect the vagina.

It is further to be borne in mind that the gonococcus is often not recoverable from these more chronic cases, that organism having been replaced by others, such as streptococci, staphylococci, or diphtheroid bacilli. The vaginitis, however, still remains infective and the organism keeping up the inflammation may be capable of conveyance by coitus or indirect contact.

As in the acute cases, it is first of all desirable to ascertain the nature of the organisms in the vagina, and for this purpose a swab should be sent to a bacteriologist.

The measures already described for acute gonorrhœa are equally applicable to the chronic cases, and when those measures have not been tried and circumstances will permit they should be first resorted to.

When such is not possible, or when they have not resulted in a cure, the practitioner must fall back on one of the various antiseptic or astringent douches given on page 297. In general it may be said that frequent irrigation with a weak antiseptic solution is better than the occasional use of strong solutions.

Perhaps the most generally useful douche is that composed of borax, 4 drachms to a quart of water, to which two teaspoonfuls of crude Sanitas have been added. In many chronic cases astringents are indicated such as alum, sulphate of zinc, or tannic acid. Antiseptic vaginal suppositories placed in the vaginal vault are probably more likely to effect an action on the cervical canal than are douches. A number of drugs may be applied in this way, such as ichthyol, carbolic acid, tannic acid, protargol, etc.

The most obstinate cases to treat are those in which the condition known as "granular vaginitis" has developed, the vaginal surface being covered with minute elevations giving it a rough appearance. In such, a direct application of the organic silver salts is necessary, or even the nitrate of silver itself in 5 per cent. solution. Before making such applications the surface must be swabbed clean of all discharge.

As the infection principally lurks in the cervical canal and the tortuous cervical glands, it is obvious that no amount of douching will alone suffice to cure the condition, and in all cases of chronic vaginitis it is supremely necessary to realize that unless the infected cervical canal is cured it is useless to hope to cure the vaginitis. To this end, therefore, weekly applications must be made to it either of protargol (10 per cent.), tincture of iodine, or in the most obstinate cases iodized phenol (carbolic acid 4 parts, iodine 1 part), whilst in the intervals the patient must be douched or must douche herself with one or other of the solutions mentioned.

Vaccine treatment is legitimately to be tried in these chronic cases, and good results have been reported. The vaccine should be autogenous for choice, i.e. prepared from the strain of the organism isolated from the patient, and the initial dose should be a small one, one to two millions repeated at intervals of not less than three days.

Instead of a gonococcic vaccine, gonococcic "phylacogen," which consists of a sterile aqueous solution of the derivatives of Neisser's diplococcus, and which is prepared by Parke-Davis, may be tried. The initial dose should be about 1 c.c., increased daily according to the degree of effect produced.

In using either a vaccine or phylacogen it is always to be borne in mind that our knowledge and experience of the effects of either are at present very limited, and hence caution is highly necessary, and, to begin with, the smallest effective dose is all that should be administered.

Other special forms of treatment have been advised for gonorrhœal

infection of the vagina. Thus it has been attempted to displace the gonococcus by introducing into the vagina the lactic acid bacillus in large numbers. Yeast has been applied with a similar object in view. We have no personal experience of either of these methods, but they are harmless.

Finally, the operative measures possible in cases of gonorrhœal vaginitis have to be considered. They are founded on the fact that in all obstinately chronic cases the persistence of the infection is due to the organisms harbouring in the cervical canal and cervical glands, or even higher up in the body of the uterus.

Chronic gonorrhœal cervicitis and endometritis may be treated either by curettage, excision of the cervix, or hysterectomy.

Curettage to be likely to be successful must be very thoroughly done, and it must be owned that even then in a considerable number of cases the discharge returns. To make the procedure more drastic it is customary to apply some strong antiseptic after the scraping has been carried out. Thus pure carbolic acid or iodized phenol are commonly used. More potent than these is chloride of zinc, 30 grains to the fluid ounce, and still more searching is pure nitric acid. If this is used, however, the greatest care should be taken to prevent the action of the acid from going too far by washing out the uterine cavity with an alkaline solution directly after the application has been made. If this is not done the destruction of tissue may lead to occlusion of the cervical canal in some part of its course, and the formation of a hæmatometra or hæmatotrachelos. When curetting for gonorrhœal cervicitis, the body of the uterus should on no account be entrenched upon, for fear of the risk of carrying the organisms up to the uterine tubes. There is a very definite risk of this.

Amputation of the cervix may be carried out when it seems certain that the infection is limited to the cervix. It is obviously insufficient if the corpus is affected.

Removal of the uterus is a last resort in these cases, but it occasionally is justifiably carried out when that organ is obviously the source of a persistent infection intractable to all other measures. In many of these patients the uterine tubes have already been removed for gonorrhœal pyosalpinx, so that the removal of the uterus brings no additional disability.

Septic Vaginitis.—Vaginitis may be due to infection by the streptococcus, pneumococcus, staphylococcus, diphtheroid bacillus, bacillus coli, and other less common organisms.

In certain cases these organisms may occur as a secondary infection following upon a primary gonococcic infection, but more often they represent the primary infection, the results of which vary in intensity according to the virulence of the organism. Thus the vaginitis may

be merely catarrhal and slight or frankly suppurative, erysipelatous or actually gangrenous.

As with gonorrhœal vaginitis, the infection is rarely limited to the vagina, but affects the cervical canal as well, and hence often tends to be very persistent, especially in the case of streptococcal vaginitis, a condition often associated with streptococcal cystitis and urethritis.

The treatment to be adopted by the practitioner in any particular instance will depend on the severity of the case and whether or no some definite cause for the disorder can be found. Thus slight catarrh of the vagina is readily cured by the use of alkaline antiseptic douches, such as the mixture of borax and Sanitas already referred to (see p. 381).

The presence of a pessary is a fertile cause of vaginitis, and such an instrument, if present, should immediately be removed before beginning any local applications.

Too frequent douching with irritant solutions may produce vaginitis, as may the use of some of the various kinds of " preventive " pessaries. All these points may have to be inquired into in individual cases.

In general the treatment of septic vaginitis does not differ materially from that of gonococcal vaginitis. In all severe cases it is desirable to obtain bacteriological evidence as to the nature of the infecting organism. This being found, the material for preparing an autogenous vaccine, if such be needed, is at hand.

Frequent douching with a weak antiseptic solution is usually better than the application of a strong antiseptic, and alkaline solutions are always to be preferred.

If the cervix be infected, the necessity of curing it is no less than in gonorrhœa, and to this end it should be exposed with the speculum and iodine or iodized phenol applied directly to the cervical canal. The various silver compounds may be used as in gonorrhœa, though evidence as to their value is less in septic than in gonococcal vaginitis.

On the other hand, vaccine treatment is more successful in streptococcic and staphylococcic infections ; but cases exhibiting diphtheroid or colon bacilli are not suitable for this treatment.

In all bad cases the patient should be kept in bed at the outset of the treatment, and if possible an efficient nurse should be obtained.

If cystitis coexists, the bladder must be irrigated with boric-acid solution at least once a day, and if the urethra is inflamed a weak solution of protargol (2 per cent.) should be instilled into it with a small glass syringe.

Some of the worst cases are those of elderly women in whom the vaginitis is associated with a suppurative condition of the interior of the uterus. In them nothing less than the removal of that organ may suffice to effect a cure.

When the condition appears to be kept up by a persistent cervicitis amputation of the cervix may be called for, though in the milder cases a thorough scraping may suffice.

If vaccine treatment be determined upon, the vaccine should be autogenous if possible. The dosage will depend on the nature of the vaccine ; if streptococcal, caution should be used, not more than five million being injected at first. Staphylococcic vaccines may be administered in much larger doses. Whenever possible the advice of the bacteriologist should be obtained on this question.

Phylacogens may be tried in septic vaginitis, especially in those cases in which the organismal content of the vagina is very mixed.

THE TREATMENT OF VAGINAL NEW GROWTHS.

Myomata and Fibromata.—Both these tumours are rare in the vagina. When occurring, they should be removed. The operation is a simple one as a rule, because the tumours are encapsuled and readily shell out. If they are pedunculated, the removal is effected simply by division of the pedicle.

Vaginal Cysts.—Vaginal cysts vary in size from that of a pea to a tumour large enough to fill the whole vagina. Small cysts giving rise to no symptoms may very well be left alone. Cysts of large size and all those giving rise to pain or discomfort should be removed. The operation varies in difficulty according to the size and position of the cyst. They are never encapsuled, and hence always have to be dissected out, and as they are very often in close relation with the bladder or bowel the proceeding may require considerable skill and care, and is not without risk.

Carcinoma of the Vagina.—Primary carcinoma of the vagina is a rare disease. Its treatment will depend upon its extent and location. Whenever possible it should be treated by extirpation. The operation to be efficient is necessarily a severe one, and demands the entire removal of the vagina, together with the uterus. This may be carried out either by the abdominal or vaginal route, or by both combined. The purely abdominal route is only feasible when the growth is situated high up and the patient is thin. The operation by the vaginal route is identical with that practised by Schauta for carcinoma of the cervix. The combined route is that most generally to be advised, the lower end of the vagina being first dissected free from below, and the operation then proceeded with on the same lines as those already described when discussing the radical abdominal operations for carcinoma of the cervix.

If the growth has involved the bladder or rectum it is usually in-

advisable to operate, and in such cases the use of radium holds out a fair prospect of relief, though the results up to the present do not justify anticipation of a cure (see p. 370).

Secondary carcinoma of the vagina is much commoner, the primary seat of the disease being either in the cervix or corpus. The vaginal growth may occur either as a direct extension from the cervix or may take the form of a discrete metastatic nodule.

As has already been said, extension of a carcinoma of the cervix into the vagina does not of itself contra-indicate a radical operation unless the extension be very diffuse. Metastatic nodules may also be removable with the primary growth, though, as a rule, by the time this variety of dissemination has occurred the disease is inoperable on other counts.

The general treatment of irremovable carcinoma of the vagina is similar to that of carcinoma of the cervix too advanced for operation (see p. 374).

Chorio-Carcinoma of the Vagina.—This rare form of malignant disease of the vagina may be primary there or may be secondary to growth in the uterus.

It is remarkable in that the prognosis, even after very localized removal, is comparatively good as compared with the ordinary types of carcinoma. This is, firstly, due to the fact that chorio-carcinomatous nodules sometimes undergo apparently spontaneous disappearance, and, secondly, because the growth is embolic from the placental site instead of being the outcome of continuous permeation along the vaginal lymph vessels. In consequence of this method of origin the presence of a nodule in the vagina does not necessarily imply that the vaginal wall between the nodule and the uterus is infected by the cells of the neoplasm.

The first point in successful treatment is early recognition of the nature of the nodule. This takes the form of a purple-coloured lump resembling a small local hæmatoma of the vaginal wall.

In all cases the uterus should be removed whether it is the seat of a primary growth or not, for even in those cases in which the vaginal tumour is apparently the only one present the disease originated from trophoblast cells deposited from the site of attachment of the ovum. The uterus being removed, the vaginal growth should be dealt with by free excision, but the total removal of the canal is not as a rule called for.

Sarcoma of the Vagina.—This uncommon disease may be primary or secondary. It is to be treated by excision on the same lines as vaginal carcinoma wherever possible. If this is impracticable, radium should be employed, and this failing, the usual palliative measures must be resorted to.

Adeno-myoma of the Recto-Vaginal Septum.—As this growth

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must sooner or later involve the rectum, and in some cases is frankly malignant, it should be removed when discovered, even though it be giving rise to no trouble. The tumour may be removed through the vagina, a by no means easy procedure owing to its adhesion to the back of the cervix and the involvement of the rectal wall, or from the abdomen when the same difficulties will present themselves. The principal danger, in either case, is that the rectum will be seriously injured.

THE TREATMENT OF INJURIES OF THE VULVA.

The vulva may be the seat of incised or lacerated wounds or of contusion. Being a very vascular part of the body, such injuries are followed by considerable loss of blood. They are to be treated on the usual surgical principles.

In the case of severe bleeding from a wound of the vulva it is worthy of remembrance that such may be controlled efficiently for the time being by underpinning the wound with a couple of long darning or knitting needles, and winding thread or yarn round them in the manner of the old-fashioned hare-lip pins. An enormous hæmatoma may result from a contusion—in such a case the swelling should be opened by free incision.

Ruptured Perineum.—If the perineum be deficient or wanting altogether, the treatment to be advised depends upon the extent of the deficiency and the presence or not of symptoms. All cases of complete rupture should be operated upon because of the distress caused by the divided sphincter. Incomplete rupture may need restoration on account of displacement of the genital canal (see p. 346). Secondary repair of a ruptured perineum should not be undertaken less than four months after the labour.

THE TREATMENT OF VULVITIS.

Inflammation of the vulva may be limited to that situation, or may be associated with a similar state of the vagina, urethra, and cervix. Its treatment depends upon its degree and cause.

Simple Catarrhal Vulvitis.—Frequent bathing with some mild antiseptic lotion is indicated. If the vagina is also inflamed this must be irrigated also. In the intervals, the parts should be kept covered with some simple ointment such as zinc, calamine, or boric acid.

Suppurative Vulvitis.—Warm antiseptic fomentations, frequently renewed, give considerable relief. The parts must be irrigated with some antiseptic lotion. When a suppurating wound co-exists, irrigation with peroxide of hydrogen (10 vols.) is excellent.

Sloughing or Gangrenous Vulvitis.—This severe grade of inflammation is chiefly seen under two conditions : (1) in children debilitated by ill-living or by one of the acute specific fevers (" noma vulvæ ") ; and (2) as a sequel to venereal infection (phagedæna). Both conditions are very serious, and may even lead to death from profound toxic absorption. Treatment must be vigorous. Frequent applications of peroxide of hydrogen (10 vols.) are indicated either by irrigation or by means of gauze soaked in the solution.

In the most severe cases the gangrenous tissue should be deliberately scraped away under an anæsthetic, and pure carbolic acid applied ; as the sloughs begin to separate, the parts should be frequently fomented and irrigated with an antiseptic solution. Isolation of the organism is desirable, and if the patient is suffering profoundly from toxic absorption the propriety of giving an antidotal serum must be considered.

Diphtheritic Vulvitis.—Diphtheria may affect the vulva either primarily or secondary to an infection of the throat. The local treatment consists in the application of some strong antiseptic, such as a 2 per cent. solution of iodine, or even pure carbolic acid. Antidiphtheritic serum must be injected in full doses in the meanwhile.

Syphilitic Vulvitis.—Vulvitis may occur at various periods during the course of syphilis.

Primary Lesions.—The first point to be established is a definite diagnosis as early as possible. To this end a smear should be made of the exudate from the lesion, and the slide examined for the presence of the specific organism. It is most important to do this, for the first essential for success is to commence specific treatment early.

It is to be remembered that Wassermann's test is not applicable in the earlier phases of syphilis, and that to postpone specific treatment until secondary lesions have appeared is materially to reduce the patient's chances of being cured.

The diagnosis being established, antisyphilitic treatment should be at once commenced. It is not within the scope of this work to discuss in great detail the various methods, but there can be no doubt that in all early cases the immediate injection of salvarsan is indicated, for it is in just these that its effects are so beneficial. The propriety of repeating the injection is to be judged by Wassermann's reaction and by the degree of improvement in the local condition that follows the injection. These are matters that are best left to an expert, if such can be obtained.

For the local lesion, the application of an ointment of calomel, gr. xx ad ʒi, or a dusting powder such as calomel and zinc oxide (equal parts), dermatol or aristol is indicated. If very foul and suppurating, frequent irrigation with peroxide of hydrogen has a cleansing effect.

Secondary Lesions.—Secondary lesions in the vulva are to be treated

in the same manner as the primary lesion. Most of them tend rapidly to disappear as soon as constitutional treatment is begun. In some cases the vulvar lesions may be very severe, with great œdema, deep ulceration, or even sloughing. In these so-called phagedænic cases vigorous local measures are necessary. The parts should be frequently irrigated with peroxide of hydrogen, and the labia kept apart by the insertion of a piece of lint smeared with calomel ointment. If gangrene is present, an anæsthetic should be administered and the slough scraped or cut away, after which pure carbolic acid should be applied. Continuous immersion of the parts for some hours in a hip-bath containing a weak antiseptic solution such as lysol ʒi to Oii is very beneficent. Constitutional treatment must be begun at once.

Tertiary Lesions.—These are rare. They may take the form of extensive gummatous ulceration or of an elephantoid hypertrophy affecting the labia minora. A definite diagnosis by means of Wassermann's reaction must be made, and the nature of the condition being rendered certain, specific treatment should be carried out. The propriety of administering salvarsan in these late lesions is very doubtful. Internally mercury, in combination with iodide of potassium, is indicated. Locally ulceration must be treated on the lines already described. Elephantoid hypertrophy of the labia requires operative removal.

Soft Chancres.—The diagnosis between an ulceration due to Ducrey's bacillus and that due to the specific organism of syphilis is often impossible, short of examining the discharge from the ulcer. This should therefore always be done at the outset.

Assuming that the spirochæte is not found, the sore should be treated with a dusting powder such as iodoform, dermatol, aristol, or iodol. The labia must be kept apart by a piece of lint, and frequent irrigation with peroxide of hydrogen, or prolonged immersion in a weak antiseptic solution, is proper when the ulceration is severe and the parts much swollen.

In bad cases in which sloughing is present an anæsthetic may be administered and the ulcer scraped, after which pure carbolic acid should be applied to it. If the glands of the groin enlarge and soften, fomentations should be applied, and as soon as the presence of pus is obvious the swelling should be opened, the pus evacuated, and pure carbolic acid applied to the interior wall of the abscess.

Tuberculous Vulvitis.—This is a very rare condition. Diagnosis will rest on the microscopical examination of the discharge and the tissue forming the floor of the ulcer. It is to be treated by excising the ulcer under an anæsthetic.

Chronic Catarrhal Vulvitis.—Chronic catarrhal vulvitis is usually due to some persistent irritation, such as a vaginal discharge, glycosuria, or the rubbing provoked by pruritus of nervous origin.

In every case the cause must be first sought for and got rid of if possible. As regards local applications these should take the form of mild antiseptics, alkaline lotions, and sedative ointments. Frequent bathing with a solution of borax ℨii ad ℥i, to which a little crude S nitas has been added, is very useful. Weak solutions of Glycothymoline, Listerine, or Zymocide are also good. For an ointment a combination of calamine with a little adrenalin and cocaine is relieving. Ichthyol ointment is also worthy of a trial. Prolonged immersion in an alkaline bath is very beneficial in some cases.

Leukoplakic Vulvitis.—The constant itching which is associated with this inflammatory state makes it an exceedingly distressing one.

The treatment of pruritus is dealt with on page 317, and in the earlier phases of this disease all the antipruritics mentioned there should be given a trial. These failing, X-rays or radium may be resorted to. Finally, in obstinate cases, and especially those in which indolent fissures and warty elevations are present, the diseased area should be excised.

This operation has proved in our hands very successful. The drawback is the deformity of the parts which it leaves. Fortunately most of the patients suffering from this disease are beyond the age when this matters.

Inflammation of the Vulvo-Vaginal Gland.—Infection of the vulvo-vaginal gland may be unilateral or bilateral. One of the commonest causes is infection by the gonococcus, but the practitioner should be very chary of making this diagnosis, for it may occur quite apart from that disorder.

In the earlier stages, when nothing presents but a tender induration, warm boric fomentations should be applied. Later on, when it is evident that pus has formed, the abscess should be incised.

A very common form of this condition is that in which a pre-existent retention cyst becomes inflamed. In these cases the swelling is much larger and thinner walled, and fluctuation is obvious from the outset.

The treatment is similar, except that it is better if possible to let the inflammation subside without incising the swelling, and then to remove it entire, in a manner identical with that described below.

Kraurosis.—This is a peculiar form of chronic inflammation affecting the vaginal orifice, the urethral orifice, and the vestibule, and characterized in its early phases by a number of tender red patches, and in its later with shrinkage of the vaginal orifice. Chronic urethritis, urethral caruncle, and diffuse carunculosis of the meatus are usually associated with it. It is a very troublesome condition to treat.

In the less severe cases, frequent mild antiseptic and alkaline douches should be prescribed, and one of the sedative ointments mentioned on page 317. These failing, the painful red spots may be touched with the

actual cautery, and if a caruncle is present this should be removed at the same time.

The most radical measure is to dissect out the ring of affected mucous membrane, including the meatus, if this is caruncular, and to bring the healthy vaginal and urethral walls up above down to the surface, and suture them there. As in many cases contraction of the vaginal orifice giving rise to dyspareunia is present, its enlargement is indicated at the same time.

Adhesion of the Vulva.—Adhesion of the labia minora should be treated by separating them, if necessary, under an anæsthetic.

THE TREATMENT OF NEW GROWTHS OF THE VULVA.

Vulval Cysts.—The commonest of these is a retention cyst of the vulvo-vaginal gland. When small, they may exist for some time without causing any symptoms. Many of them inflame sooner or later, increase rapidly in size, and become painful. The treatment is removal, the cyst being dissected out whole if possible, though frequently this cannot be done owing to the adhesion of the cyst wall. A suppurating cyst in particular is difficult to excise entire. If it ruptures in course of removal, as much as possible of the cyst wall should be cut away, and the remainder drained.

Small pedunculated or sessile cysts are sometimes found on the labia minora. They should be cut away with scissors, and the resulting wound sutured.

Sebaceous cysts of large size are found occasionally on the labia majora. They should be excised.

In connection with vulval cysts mention may be made of cystic swellings arising in congenital or acquired peritoneal sacs in the vicinity of the groin. Of these, the commonest is a hydrocele of a femoral hernia sac. Less commonly a similar condition may affect the sac of an inguinal hernia. Lastly, mention may be made of a hydrocele of the canal of Nuck, which may extend some way down the labium majus.

All these cystic swellings require operative treatment, the sac being excised and the weak spot in the parietes closed and reinforced by sutures in layers.

Lipomata and Fibromata.—These tumours grow from the labium majus, and may attain considerable size. Their treatment is removal either by enucleation, if sessile, or by division of their pedicle if they are pedunculated.

Varicose Veins.—Extreme varicosity of the vulval veins requires operative treatment. The veins must be isolated and ligatured, and

then removed. The operation may be by no means an easy one, for the veins may adhere very closely to the skin. The worst cases are seen in pregnant women, but it is undesirable to operate in such circumstances unless the surgeon is forced to do so, as the bleeding may be extreme.

Vulval Papillomata.—Isolated warts of the vulva, often pigmented, are common on the labia majora. They may form the starting-point of a melanotic sarcoma. If giving rise to trouble either by rapid growth, soreness, or bleeding they should be excised, and the wound left closed by sutures.

Venereal warts (the so-called gonorrhœal warts) are not at all uncommon. They may vary in size from a pin-head up to a mass as large as a cauliflower. They require excision. This is best effected with scissors, the site of each excised wart being touched with the actual cautery. The operation requires thorough doing, for if one wart remains reinfection may occur, and the process have to be repeated. When the mass is large, bleeding may be free. If the cautery does not suffice to stop it the bleeding points must be secured by sutures.

Elephantiasis.—The pseudo-elephantiasis of syphilis has already been referred to. The true filarial disease requires the excision of the hyperplastic labia. Where the mass is large there may be considerable bleeding, which is to be arrested by ligature and suture.

Cancer of the Vulva.—The commonest form of vulval cancer is squamous cell carcinoma superimposed on a pre-existent leukoplakic vulvitis. We have already emphasized the fact that all warty elevations occurring in the course of the latter disease are incipient carcinomata, and the same may be said of most of the indolent fissures and ulcers. It is most important for both the practitioner and surgeon to realize this, or otherwise treatment will be either delayed, inefficient, or both. Carcinoma may begin in the urethra ; very occasionally it starts in the vulvo-vaginal gland or in one of the minute odoriferous glands scattered about the vulval orifice.

Sarcoma, usually of the melanotic variety, is a rare disease. It is apt to originate from pigmented warts or moles on the labia majora or mons veneris.

The general treatment of vulval cancer is the same wheresoever it starts, namely, free excision at the earliest possible moment. It does not suffice to remove the growth alone, the groin glands on both sides must be removed also, and moreover when leukoplakia coexists the whole of the pre-carcinomatous area must be excised, otherwise the patient is liable to fresh growth, originating in the diseased surface left behind. The dissection of the groin glands must be complete, not only the horizontal set being removed, but those over the saphenous opening also.

Carcinoma of the urethra has a very serious outlook, for its free extirpation may be impossible without removing the vesical sphincter.

In all inoperable cases of vulval cancer irradiation by radium or X-rays is worthy of a trial, as it is a situation peculiarly well suited for this treatment. As a supplemental measure after operative removal, especially when this has been deemed not satisfactorily accomplished, it is also to be strongly recommended.

The general treatment of these advanced cases is that for irremovable and terminal cancer in general, and consists in allaying pain with analgesics and hypnotics, and keeping the ulcerated parts as sweet as possible by frequent irrigation and antiseptic dressings.

THE TREATMENT OF SYMPTOMS REFERABLE TO THE URINARY TRACT.

Whilst a detailed discussion of the treatment of the various conditions giving rise to urinary symptoms in women is not within the province of this work, a brief outline is necessary.

Renal Pain.—The treatment will obviously depend upon the condition found. The practitioner's duty, therefore, is first of all to be certain of his diagnosis as far as possible.

To this end a careful and complete examination of the urine must be undertaken. A twenty-four hours' specimen should be procured, preferably by means of the catheter, and a specimen should be drawn off into a sterile bottle for bacteriological investigation.

An X-ray examination is next to be undertaken, and these measures having failed to elicit material for a diagnosis, cystoscopy should be advised.

Grave lesions, such as a renal calculus, tuberculous nephritis, or new growth, will require the measures proper to them.

B. coli pyelitis is to be treated by large doses of citrate of potash, and the administration of a urinary antiseptic, such as urotropin, or cystamine, continued with ammonium benzoate or acid sodium phosphate, as thus :—

℞ Urotropin,	gr. 10.	
Ammonium Benzoate,		
or		
Acid Sodium Phosphate,	gr. 10.	
Infus. Uræ Ursæ,	ad ʒi.	
Sig.—This dose three times a day after meals.		

℞ Urotropin,	10 grms.	
Ammonium Benzoate,		
or		
Acid Sodium Phosphate,	10 grms.	
Infus. Uræ Ursæ,	ad 480 c.c.	
Sig.—Two tablespoonfuls to be taken three times a day after meals.		

and an autogenous vaccine should be prepared, though our experience of this latter method of treatment has been disappointing. Large doses of citrate of potash are sometimes given with success.

If the pain be due to nephroptosis the question of operative fixation of the kidney has to be considered. The importance of being sure that the symptoms are really due to this cause has been emphasized. When such proof seems reasonably established, the organ should be fixed. The results of the operation in this class of case are good.

It is otherwise, however, in that class of patient in whom the relation borne by the pain to the renal mobility is doubtful, and in such palliative and " placebo " methods of treatment should be exhausted first. Of these, that most commonly advised is the wearing of a " kidney " belt. We are of opinion that no apparatus yet made is able to control an unduly mobile kidney, and believe that the use of " kidney pads " is actually injurious. Where, however, the symptoms are due largely to general enteroptosis a well-fitting belt or pair of corsets often gives relief.

Vesical Pain.—The frequency with which transient attacks of vesical pain unexplained by definite signs of cystitis are met with in women, has been commented upon. For such, the following prescription will be found very useful :—

R	Pot. Citratis,	gr. xxx.
	Tinct. Hyoscyami,	ℳ xxx.
	Infus. Buchu,	ad ℥i.

Sig.—This dose three times a day after meals

R	Pot. Citratis,	30 grms.
	Tinct. Hyoscyami,	30 c.c.
	Infus. Buchu,	ad 480 c.c.
	Fiat mistura.	

Sig.—Two tablespoonfuls to be taken three times a day after meals.

R	Ammonii Bromide,	gr. x.
	Phenalgin,	gr. x.

Sig.—This quantity in a cachet as directed.

R	Ammonii Bromide,	10 grms.
	Phenalgin,	10 grms.
	Divide into fifteen parts.	

Sig.—One to be taken in a cachet as directed.

Salol in gr. x doses is also often successful in such cases.

When definite cystitis due to b. coli is present, the same treatment as that for pyelitis produced by that organism is indicated. Irrigation of the bladder once or twice a day is proper in severe cases, but these are in the minority In cystitis due to staphylococcic or streptococcic infection, however, washing out the bladder is very important.

Tuberculosis of the bladder is usually associated with, and is secondary to, tuberculous pyelitis, and may improve or disappear after nephrectomy. Tuberculin and the other general measures proper for tuberculosis are indicated.

Vesical pain due to new growth in that situation should be treated by operation if removal of the growth is deemed feasible. When this is not possible and the sufferings of the patient are great, the question of establishing a permanent fistula will have to be considered.

Vesical calculi require removal. This is usually easily effected through

the urethra, after lithotrity, if necessary. Calculi impacted in the ureter just at its entrance into the bladder may also be removed by the urethral route, but if situated higher up should be dealt with through an abdominal incision.

Painful Conditions of the Urethra.—URETHRITIS.—Acute urethritis is usually gonococcal (see p. 377). Chronic urethritis is not at all uncommon, especially in elderly women, and it is peculiarly associated with two other conditions : kraurosis vulvæ and urethral caruncle. Its treatment will be considered under these heads.

URETHRAL CARUNCLE AND DIFFUSE CARUNCULOSIS.—A urethral caruncle should be removed by snipping it off with scissors and then cauterizing the base fairly deeply with the actual cautery. The operation may be performed under a general or local anæsthetic.

A more troublesome condition is diffuse carunculosis, in which the whole periphery of the meatus is involved. It is the outcome of long-continued chronic urethritis. It may be treated by repeated applications of stick nitrate of silver combined with application of 10 per cent. protargol to the urethral mucous membrane to allay the chronic urethritis. In bad cases the whole of the affected meatus must be dissected out and the upper part of the urethral wall brought lower and sutured to the surface.

SUB-MEATAL FISSURE.—This painful fissure is certainly in some cases the forerunner of a caruncle. It is best treated by touching it with stick nitrate of silver. If a urethral discharge is present, protargol may be applied on a fine probe to the interior of the channel.

PROLAPSE OF THE URETHRA.—This may exist without any symptoms. When causing pain or disability it should be operated upon, the redundancy being removed and the upper part of the urethral wall sutured to the surface.

Difficult Micturition.—The cause must be found and corrected if possible. Thus tumours impacted in the pelvis must be removed, and a cystocele restrained either by a pessary or an operation.

When the origin is purely nervous, the bromides and nux vomica are indicated.

Frequent Micturition.—Here again the cause must be sought. Cystitis must be suitably treated, displacements of the genital canal corrected, and tumours pressing upon the bladder removed.

In those cases in which no cause can be found, vesical sedatives, such as citrate of potassium and hyoscyamus, are indicated.

Retention of Urine.—At the outset the catheter must be passed, and afterwards the bladder must be prevented from becoming overfull by directing the patient to pass water frequently.

The cause of the retention must be sought and treated. Thus an

incarcerated retroverted gravid uterus must be pushed up under an anæsthetic, whilst an impacted fibroid or ovarian cyst must be operated on without delay.

Retention of urine due to purely nervous causes must be treated by catheterization, but long intervals before emptying the viscus should be observed, during which the patient should be encouraged to pass water herself.

Incontinence of Urine.—When a gross defect exists, such as a vesical or ureteric fistula, the question of an operation to close the adventitious opening must be considered.

In the absence of such an explanation the practitioner must assure himself by passing the catheter that he is not dealing with a case of retention of urine complicated by overflow.

The most difficult cases to treat are those in which no definite cause is discoverable, and, as has already been said, these may be divided into two groups : (1) Those in which the incontinence occurs at night, and (2) those in which it occurs by day.

The patients of the first group are usually young girls in whom the disability may have existed since childhood. The usual treatment is to give increasing doses of belladonna combined with one of the bromides. At the outset 5 minims of the tincture should be administered three times a day, and cautiously increased up to 15 or 20 minims if the patient shows no ill symptoms.

Drug treatment is, however, a very uncertain method of cure.

The best results are obtained by hydrostatic dilatation of the bladder, which is performed by running a quantity of boric acid solution into the bladder, whilst the patient is under an anæsthetic, by means of a long tube and funnel attached to the catheter. A considerable water-head should be given (3 to 4 feet), so that hydrostatic pressure is brought to bear on the bladder wall, thus stretching the detrusor muscle with an effect comparable to that produced by stretching the anal sphincter.

The procedure, if efficiently carried out, often entirely cures the condition, but it may have to be repeated from time to time.

For patients of the second group a number of measures may be tried, but the disability is a very stubborn one. Hydrostatic dilatation is obviously useless, for in these cases it is the vesical sphincter that is at fault. Always supposing there is no gross physical defect to be discovered, such as a cystocele or urethrocele, electrical treatment may first be tried—galvanism, faradism, and high-frequency currents may be used in turn, one pole being placed in the vagina immediately under the sphincter and one on the pubis, or an electrode can be passed up the urethra. The results are variable, being successful sometimes and sometimes failing.

Various operative measures have been devised, such as cauterizing the floor of the urethra, dissecting the canal free, and rotating it through a circle and suturing it in the new position, but in our experience the greatest chance of success lies in an operation for tautening the vesical sphincter. This is carried out through an incision in the anterior vaginal wall ; the sphincter is exposed and a series of sutures are inserted until the entrance into the bladder is sufficiently narrowed. We have had much success with this operation.

X-RAYS IN GYNÆCOLOGY.

Doe rabbits which have been subjected to the action of Röntgen rays show certain definite changes in their ovaries, namely, the glands atrophy, the Graffian follicles disappear, the primary follicles degenerate and diminish in number, and the interstitial tissue undergoes fibrosis. Thus the internal secretion of the ovaries is arrested and the ova are destroyed.

The extent to which these changes take place, depends upon the quantity of rays administered, and it is possible so to regulate the dose that some of the primary follicles will escape and not all the interstitial tissue will have become fibrous. Thus in such circumstances, in a few months, the genital function of the rabbit may become re-established. In addition to the above changes, it has been noted, in the case of bitches, that death has resulted in a few months with ulceration of the intestine and atrophy of Lieberkuhn's glands.

The action of X-rays on the human ovary corresponds to that already described in the case of the rabbit, but, up to the present, the intestinal lesions described in bitches have not been observed in the human female.

The clinical result to be expected from a consideration of the changes induced by the above experiments is either the menopause or sterility, with a diminution in the amount of uterine hæmorrhage, menstrual or otherwise, according to the quantity of rays administered, and such is the case.

INDICATIONS FOR THE USE OF X-RAYS IN GYNÆCOLOGICAL PRACTICE. —Those who have given particular attention to the action of X-rays on the female reproductive organs quote the following list of diseases as, in certain circumstances, likely to benefit by the action of irradiation : Fibroids and fibrosis of the uterus ; menopausal hæmorrhage, dys-menorrhœa, leukoplakic vulvitis, and inoperable carcinoma of the uterus and ovaries.

FIBROIDS OF THE UTERUS.—Röntgen rays are used in the treatment of fibroids to arrest bleeding and reduce the size of the tumour. Their

principal use is concerned with the control of hæmorrhage. It is true that, in certain cases, the size of the tumour decreases or even at times the tumour has been noted to disappear, nevertheless this reduction in size is so uncertain that the chance of its occurrence in our opinion is of no practical importance.

Although doubtless, in properly selected cases, the treatment by X-rays of the bleeding due to fibroid tumours of the uterus will meet with a gratifying success, yet such treatment is hedged round with so many qualifications that, in our experience, the majority of fibroids one meets are not suitable for treatment by this method.

Most practitioners who favour the treatment of fibroids by X-rays are of opinion that it is useless in the following circumstances :—

    1. If the patient is under thirty-nine years of age.
    2. If the fibroid is polypoid, sub-peritoneal, or cervical in position.
    3. If the tumour reaches above the umbilicus.
    4. If any secondary changes are taking place in the tumour.
    5. If there is inflammatory disease of the uterine tubes present.
    6. In women who have ceased to menstruate.

In addition they point out :—

    1. That the treatment is not nearly so likely to be effective in old fibroids.
    2. That as the first result of irradiation is to increase the bleeding, in these very rare cases in which the patient is nearly dead from loss of blood, treatment by X-rays may be fatal, although it is contended that surgical treatment would have a like result.
    3. That sufficient shrinkage of the tumour cannot be relied upon to relieve any serious pressure symptoms, neither can the disappearance of the tumour be anticipated.
    4. That in some cases, especially in younger women, the bleeding returns and further treatment is necessary.
    5. That unless great care be taken there is serious danger to the skin.
    6. That the length of time necessary to effect a cure is longer than that required for operation. Generally three to four months.

From the above reservations it will be seen that the use of X-rays in the treatment of fibroids is necessarily greatly restricted, but with properly selected cases, and particularly if the patient is suffering from some general disease which makes a surgical operation inadvisable, their use may be advocated.

We have not had much experience of the effect of the treatment by X-rays on fibroids of the uterus, but, such as it is, it has been dis-

appointing. Our experience no doubt has been limited principally because most of the cases of fibroids of the uterus we have been called upon to treat were, in our opinion, unsuitable for irradiation, and indeed, judging by the limitations already set down by those practitioners who particularly favour this method of treatment, they would have themselves ruled them out.

In our opinion the only practical use of X-rays in the treatment of fibroids is their power, in certain curcumstances, to control the bleeding. In connection with this symptom, however, it has to be remembered that bleeding, in conjunction with the presence of a fibroid in the uterus, does not necessarily indicate that such bleeding is due to an increased area and vascularity of the endometrium only. Such bleeding may very well be due to the presence of a submucous fibroid that is in the process of becoming polypoid, it may be due to some secondary change in the tumour, or it may be due to the existence of malignant disease, in which cases the treatment by X-rays would be useless or disastrous.

In certain cases, therefore, and they are at times very difficult to determine, the cervix should be dilated and an intra-uterine examination should be made under an anæsthetic, to eliminate, if possible, such complications. Indeed, such a procedure is advocated by those who are in favour of X-ray treatment.

With regard to the question of the expense to be incurred, therefore, which is cited by some as a point in favour of X-ray treatment, in many cases there would not seem to be such a saving as is claimed, since the cost of the fees for the Nursing Home and operation, in addition to those of treatment by X-rays when the case had been declared suitable, would not fall short of those incurred by the capital operation.

No doubt when the X-rayist is also a professed gynæcological surgeon, or when he is working in conjunction with such a one, the danger of misdiagnosis is partly safeguarded. It cannot be denied, however, that the most expert gynæcological surgeon may at times, before operation, mistake the nature of the tumour he is dealing with, when treatment by X-rays may not only be useless, but may even be harmful.

It is contended by those who favour treatment by X-rays that the most suitable cases are those in which the tumour is young and growing quickly, a condition of affairs which, in our experience, is nearly always associated with some secondary change, for it is a well-known fact that " normal " fibroids grow very slowly.

In conclusion we would say that in our opinion the most suitable cases for X-ray treatment are small interstitial fibroids which are causing bleeding, occurring in women in whom the state of their general health is a contra-indication to a major operation or who refuse such. Myomectomy, by the modern methods, is such a safe and satisfactory

operation that the principles of surgery and the interests of the patient would seem to be better served by curing the bleeding by a myomectomy than by inducing the menopause.

FIBROSIS OF THE UTERUS.—In patients suffering from this disease the induction of the menopause by destruction of the ovaries with X-rays will lead to an arrest of the bleeding. Moreover, it appears to be a fact that if the dose of X-rays is properly regulated the bleeding may be sufficiently controlled without inducing the menopause. As a matter of experience, however, it is found that such treatment is useless in patients under forty years of age ; whilst to treat every patient thus suffering, over forty years of age, without a preliminary intra-uterine examination, would inevitably result in carcinoma remaining undetected, at a time when there was the best chance to save the life of the patient. Nevertheless there seems to be a very definite field for such treatment in this class of cure.

EXCESSIVE BLEEDING ASSOCIATED WITH THE MENOPAUSE.—So many patients in this class are the victims of cancer that it would be a most absurd proceeding to treat such cases, as a routine with X-rays. Carcinoma having for certain been eliminated, treatment by X-rays may be recommended to hasten what Nature will eventually attain in those cases in which the excessive bleeding is having a serious effect upon the patient.

DYSMENORRHŒA.—Rarely dysmenorrhœa is so severe that all methods of treatment by drugs or minor surgical operations are useless, and to relieve the patient, or to prevent her becoming a confirmed morphio maniac, hysterectomy is practised with—as regards the pain—entirely satisfactory results. In such cases, as an alternative, the ovaries may be destroyed by irradiation, but very large doses are required.

LEUKOPLAKIA VULVÆ.—At times treatment of this condition by X-rays is said to have resulted in relief, but in our experience it has been disappointing, and in certain instances it has, we believe, hastened the development of carcinoma.

INOPERABLE CARCINOMA OF THE UTERUS AND OVARIES.—Treatment of inoperable carcinoma of the uterus by X-rays may for a time delay the distressing symptoms associated with this disease. Thus the bleeding can be arrested, the pain relieved, and the discharge stopped. It is also stated that the incidence of vesico-vaginal or recto-vaginal fistulæ is much less frequent in cases treated by irradiation.

Likewise it is asserted that the growth of carcinoma of the ovaries can be for a time delayed by such treatment.

A better field for the employment of such treatment seems to be after the diseased organs have been removed by operation, the X-rays being used with a view to the destruction of any cancer cells that have escaped removal during the operation.

Finally it must not be forgotten that nothing is known as to the remote effects of X-rays. Although it is true that no bad effects have *been recorded in human females,* nevertheless sufficient time has not elapsed to allow any definite statement to be made on this subject.

The results of the experiments on bitches, already mentioned, should not be lost sight of.

RADIUM IN GYNÆCOLOGY.

Our own experience of Radium as a therapeutic agent in the treatment of gynæcological diseases has been limited to its use in advanced cases of carcinoma and in certain cases of fibrosis of the uterus. In addition to these diseases radium has proved useful, on occasions, in the hands of others in cases of chronic endometritis, pruritus vulvæ, carcinoma of the vulva, and fibroids of the uterus.

Apart from the cases of carcinoma, the available data on which a safe judgment can be formed as to the real value of radium in the treatment of diseases peculiar to women is insufficient. Certain it is that radium appears to be of the most benefit in those cases in which the disease will certainly prove fatal in the course of a few months, namely, those of advanced carcinoma of the cervix.

CARCINOMA OF THE UTERUS.—We have already discussed the action of radium on carcinoma of the cervix (see page 374). The same temporary benefit may be attained in cases of carcinoma of the corpus.

Sarcoma of the uterus is said to be more responsive to treatment by radium, and cases have been reported in which the treatment has been followed by disappearance of the growth.

The action of radium is entirely local, probably not more than half an inch from its point of application. To expect, therefore, to cure advanced malignant disease of the uterus by its means is to expect the impossible, since the disease will have extended far beyond the distance to which the rays could possibly gain access. Moreover, owing to the peculiar anatomical relations, namely, the proximity of the bladder, rectum, and ureters to the uterus, this drawback cannot be surmounted by curetting away as much of the diseased tissue as possible before applying the radium, since these structures will then be so near the action of the radium that fistulæ will almost inevitably result. Neither can this difficulty be got over by giving very powerful doses of radium, doses powerful enough to destroy outlying cancer cells, since the destruction of tissues at its point of application would be too great. Although rarely the application of radium to a malignant tumour stimulates it to increased growth, nevertheless in most cases, and certainly in the large number of cases of carcinoma of the uterus which we have

thus treated, its action is to destroy the growth in its immediate neighbourhood.

Theoretically therefore its use, in one way, would appear justifiable in very early cases of malignant disease.

It is to be remembered, however, that although a case may appear to be an early one on clinical examination, yet the malignant disease may already have spread out into the broad ligament, and that without causing fixation of the uterus. Also those who have most studied the action of radium state that, apart from destroying the cancer cells in its immediate neighbourhood, it stimulates the growth of those cancer cells farthest removed from the action of the radium.

The best use that could be made of radium in the treatment of malignant disease of the uterus would be to apply it in the site of the operation area after the uterus had been removed. Owing, however, to the proximity of the bladder, ureters, rectum, and great blood vessels of the pelvis, such a use would seem to be associated with great danger ; indeed, in the only case that we have knowledge of in which radium was used in this way, the result was disastrous.

We have used radium in several cases of advanced carcinoma of the cervix in which the chances of removing the growth by operation seemed to be impossible, owing to the marked fixation of the uterus. As a result of the radium the uterus became movable, and we were able to perform a radical hysterectomy ; but the operation in almost all the cases was made exceedingly difficult on account of the dense fibrosis set up, and the mortality was very high.

CHRONIC ENDOCERVICITIS.—The application of a tube of radium into the cervical canal is said to result in relieving some of these cases.

FIBROSIS OF THE UTERUS.—We have used radium in several cases of this disease. In some the menopause has apparently been induced ; in others the arrest of hæmorrhage has been noticed ; in others no apparent result has been attained.

The results that may be expected probably depend upon the length of exposure, the amount of radium used, and the personal equation of each patient. It may be possible so to regulate the dose as to ensure a return to normal menstruation, but there are not sufficient data available by which one can arrive at such an accurate estimation.

If, therefore, a practitioner proposes to use radium in this disease, he would be wise to prepare the patient as to the uncertainty of its action, and more particularly that it may induce the menopause.

LEUKOPLAKIC VULVITIS.—Our experience of radium in this connection is unfavourable. We have had several cases in which we believe that the development of carcinoma was hastened.

FIBROIDS OF THE UTERUS.—We have no experience of the value of

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radium in the treatment of fibroids. It is stated by those who have that it can usefully be employed in the same class of cure as is suitable for X-ray treatment.

CARCINOMA OF THE VULVA.—The hæmorrhage and discharge associated with advanced cases of carcinoma of the vulva can be relieved by the application of radium. Cases have been reported in which, after the employment of radium, it was possible to remove a growth which before had been inoperable.

COMBINED USE OF X-RAYS AND RADIUM.—It is contended by those practitioners who have given particular attention to the uses of X-rays and radium that in many cases a better result may be obtained by their combined use, than in the use of each separately. The following gynæcological diseases are mentioned as likely to be benefited by such combined use :

Pruritus vulvæ, fibroids of the uterus, and carcinoma of the uterus in advanced stages, with secondary deposits.

To SUM UP ---As far as our present knowledge goes it seems that the best use that can be made of X-rays or radium is to employ them for prophylactic purposes after the removal of malignant growths. Such a use appears to be attended with satisfactory results when employed in sites that are easily get-at-able, as, for instance, the vulva. As we have already pointed out, the operation site in gynæcological diseases is not an ideal one for the application of radium, although the same drawbacks do not obtain with X-rays, and it may be that better permanent results would be obtained in cases, say, of radical hysterectomy for malignant disease of the uterus, if all such cases, after their recovery from the operation, were subjected to regular courses of Röntgen irradiation once a month for some months after the operation.

PART V.

MEDICO-LEGAL ASPECTS OF GYNÆCOLOGY.

NULLITY OF MARRIAGE.

THE Court has jurisdiction to inquire into the validity of a marriage—
1. If celebrated in England.
2. Wherever celebrated, if at the commencement of the suit, the respondent is ordinarily resident in England.

A legal marriage can only be contracted according to English law by single persons—including in that term widowers, widows, and divorced persons—who are not within the prohibited degrees of consanguinity or affinity, and who are of sound mind, and consenting to the marriage at the time of its solemnization.

A suit for nullity of marriage may be instituted upon the ground that the marriage is void at law by reason of its validity, or upon the ground that it is voidable by reason of its non-consummation. It only falls within the scope of this work to deal with the circumstances in which a marriage will be declared void by reason of its non-consummation.

The material matters requiring consideration are as follows :—
1. Non-consummation of the marriage as a ground for its annulment.
2. Who may petition for a decree of nullity on that ground.
3. The time within which a petition may be presented.
4. The proof of incapacity sufficient to justify a decree.
5. The general nature of the evidence.
6. The grounds upon which, notwithstanding incapacity, a decree may be refused.

1. Non-consummation of the Marriage as a Ground for its Annulment.—The contract of marriage implies the ability to consummate it. Accordingly, if, at the time of the solemnization of the marriage, one of the parties to it is and continues to be incapable of sexual intercourse either generally or with the other party to the marriage, and whether such incapacity be due to structural defect or malformation, or some other cause, the marriage is voidable at the instance of the party injured.

The basis of the interference of the Court is not the existence of structural defect, but the impracticability of consummation, and if in any case in which a marriage has not been consummated it is established that in consequence of some condition of one or both of the parties to the marriage, existing at the time of the marriage, sexual intercourse, although physically possible, is practically impossible, the Court may declare the marriage null and void.

The incapacity must exist at the time of the celebration of the marriage. Incapacity supervening after the marriage is not a sufficient ground for its annulment. Further non-consummation of the marriage by reason of incapacity does not render the marriage void, but merely voidable.

It follows from this principle that a decree of nullity on the ground of incapacity for sexual intercourse can only be obtained at the instance of one of the parties to the marriage, and cannot be obtained after the death of one of the parties.

It is a settled rule of English law that in order to entitle the Court to annul a marriage on the grounds of its non-consummation, either general incapacity or incapacity in relation to the other party to the marriage must be established. In the first edition of this work reference was made to a case in which it had been decided that the contract of marriage implies the willingness as well as the capacity to consummate it and that accordingly, although there was neither impotence on the part of the husband nor incapacity on the part of the wife, but the consummation of the marriage had been prevented after repeated attempts on the part of the husband by the wilful and persistent refusal of the wife to allow intercourse, this conduct on the part of the wife constituted a valid and sufficient ground for annulling the marriage.

This decision was a departure from the rule above referred to, and it has been recently overruled by a decision of the Court of Appeal in England.

Incapacity for sexual intercourse of one of the parties rendering consummation practically impossible must accordingly be established either directly or as an inference from the facts of the case in order to entitle the Court to annul a marriage.

The incapacity need not necessarily amount to general incapacity. There may be incapacity limited to the other party to the marriage, and such incapacity on the part of the husband or wife as the case may be, i.e., *impotentia quoad hunc vel hanc*, if established, is a sufficient ground for annulment of the marriage. But mere refusal of marital intercourse, while it may, taken together with other circumstances, afford evidence of some abnormal physical condition involving incapacity, does not by itself constitute a ground for a decree of nullity.

The incapacity to justify a decree of nullity must be incapacity for sexual intercourse as distinguished from incapacity to conceive.

A marriage may be consummated within the meaning of the law if the parties are capable of sexual intercourse, although the wife is incapable of conception.

2. Who may Petition for a Decree of Nullity on the Ground of Non-consummation of the Marriage.—A suit for nullity of marriage based on its non-consummation can only be instituted by one of the parties to the marriage. As a general rule such a suit can only be brought by the party who suffers the injury in consequence of the incapacity of the other party. The party to whose incapacity the non-consummation of the marriage is due cannot, as a rule, sue for its annulment.

This has undoubtedly been and still is the general rule, but it is not an absolute rule. In a case in which the husband was the petitioner and the non-consummation of the marriage was admittedly due to his impotence, the Court, notwithstanding, granted a decree of nullity at the husband's instance upon it being proved that he was unaware of his incapacity at the time of the marriage, and that the wife while refusing to take the necessary steps to annul the marriage altogether repudiated it and its obligations.

In another case in which both parties were apparently competent, but it was proved that as between themselves it had not been possible to consummate the marriage owing to the fact that the generative organs of the wife were small, whereas those of the husband were unusually large, the Court pronounced a decree of nullity at the instance of the wife, although it was admitted that she might have rendered herself *apta marito sua* by means of a small and harmless operation which she had refused to undergo.

It is not possible to state exhaustively what facts will be sufficient to take a case out of the general rule above referred to. Each case will depend on its own special circumstances, but the modern tendency of the Court appears to lean in favour of annulment of a marriage if it be established that the marriage cannot be consummated, and against the more or less technical rules that may formerly have prevailed.

3. The Time within which a Petition may be Presented.—Proceedings for nullity may be instituted at any time. Neither the fact that a petition is presented very shortly after the marriage, nor the fact that there has been great delay in presenting it, is in itself a bar to the suit.

It was formerly the rule that when the alleged incapacity was a mere inference from the fact that the marriage had not been consummated, a petition could not be presented until after a cohabitation for three years. This rule did not apply to cases in which incapacity could be

directly established independently of the inference to be drawn from the mere fact of non-consummation, and it is now no longer the rule.

In cases in which no definite physical infirmity can be proved, the question to be considered as regards the time for presentation of a petition will be whether, having regard to the particular facts of the case, there has been sufficient cohabitation to enable the Court to be satisfied that the non-consummation is due to incapacity, and is not due to temporary causes, as, for example, mere nervousness on the part of the man or mere coyness on the part of the woman.

No general rule can be laid down except that the facts must be such as to enable the Court to infer incapacity. If that inference ought properly to be drawn—as, for example, when the respondent refuses to submit to medical inspection—it matters not how short the period of cohabitation may have been.

The question is a question of fact, depending upon the particular circumstances of each case, and the medical adviser must form his opinion having regard to those circumstances.

It remains to consider the effect of delay in the presentation of the petition.

Delay in taking proceedings as above stated does not in itself constitute a bar to the suit. It will be a material element in the investigation of a case which upon the facts is doubtful. When the alleged impotence or incapacity is in dispute, delay in taking proceedings will increase in proportion to the length of the delay, the burden of proof which rests upon the petitioner.

Further, there may be conduct involving delay on the part of the petitioner, which will induce the Court to refuse relief, notwithstanding proof of incapacity. If, for example, the petitioner has, with knowledge of all the material facts and of the legal remedy, stood by and taken benefits arising from the marriage and has treated it as valid and binding in such circumstances as would make it unfair and inequitable to allow him or her afterwards to treat the marriage as null and void, the Court might refuse relief. Whether it would do so or not would depend on the circumstances of the particular case.

If, however, there has been serious delay, the Court will require it to be explained, but if incapacity be clearly proved, mere delay, unaccompanied by any circumstances that might make it inequitable to grant relief, or by circumstances showing want of *bona fides* on the part of the petitioner, will not afford an answer.

For example, a decree was granted notwithstanding that the petition was not presented until seventeen years had elapsed after the date of the marriage, the explanation for the delay being that the petitioner was a clergyman, who during that period held a responsible position in the

Church and that the proceedings would have caused a scandal in his district.

In another case in which there was a delay of seven years after the petitioner (the wife) became aware of the respondent's impotency and her legal rights, the Court granted relief, although the only explanation of the delay apparently was that the petitioner had hoped that notwithstanding the impossibility of sexual intercourse she might be able to live happily with the respondent, and had delayed proceedings accordingly.

Generally it may be said that proceedings should be taken promptly after the fact of incapacity has become known to the party injured, and that while mere delay is no bar, and while at the present day the Court appears more ready to accept explanations for delay than was formerly the case, delay in instituting proceedings may—and in a doubtful case certainly will—tend to prejudice the success of the suit.

4. The Proof of Incapacity sufficient to justify a Decree of Nullity.—The incapacity must be incurable. When, however, the only cure is by means of an operation which the respondent refuses to undergo, the Court will treat the incapacity as being incurable within the meaning of the above rule. Equally when the incapacity is due to self-abuse, or to the drug habit, or to alcoholism, and might be cured if the habit were abandoned, it will be treated as being incurable upon proof that the respondent continues the habit, and will not abandon it.

Continued failure of the respondent, being the husband, to consummate the marriage, or persistent refusal by the respondent, being the wife, to allow it to be consummated, combined with refusal to submit to medical examination, will afford in the absence of other evidence sufficient *prima facie* proof of incapacity to justify a decree.

Persistent failure or refusal, as the case may be, to consummate the marriage or to allow it to be consummated, may be sufficient to enable the Court to draw the inference of incapacity, although the respondent has submitted to medical examination and such examination discloses no definite cause for, or evidence of, incapacity.

Any malformation, defect, or condition rendering connection or complete connection impossible will be sufficient evidence of incapacity. The following are instances :—

In the male, absence of the testicles or penis, or incapacity for erection due either to deformity or organic or functional diseases of the nervous system.

In the female, all conditions of the vulva or vagina which definitely prevent penetration. For a list of these the reader is referred to page 109.

5. The General Nature of the Evidence.—The burden of proof is on the petitioner as being the party seeking to impugn the marriage. Accordingly sufficient evidence must be given to satisfy the Court—

1. That the marriage has not been consummated.

2. That its non-consummation was not due to incapacity on the part of the petitioner.

3. That its non-consummation was due to incapacity on the part of the respondent, or having regard to the decision referred to in paragraph 1, to wilful, steadfast, and persistent refusal on the part of the wife to allow intercourse.

The petitioner must necessarily give evidence to prove the non-consummation of the marriage, and that this was due to the fault of the respondent. Unless the petitioner's case fails by reason of insufficient evidence the respondent will generally be a necessary witness in support of the case in answer to it.

Any evidence tending to throw light on the case set up by the petitioner or respondent is admissible. Accordingly, evidence as to the relations between the parties, and as to their married life generally, is material.

Medical evidence as to the physical condition and capacity of the parties is necessary, and the Court on the application of either party makes an order for the medical examination of the parties by medical inspectors appointed by the Court.

These inspectors, after identification of the parties, separately and apart from each other, medically examine the parties. After the examination, these inspectors make their report to the Court, and such report may then be inspected by either party.

If the respondent refuses to obey the order for medical examination by the inspector, the fact of such refusal will afford evidence from which the Court may draw the inference of incapacity.

Either party may, notwithstanding the examination by the inspectors, call other medical witnesses to give evidence in addition to the evidence of the inspectors.

6. The Grounds upon which a Decree of Nullity may be refused notwithstanding Proof of Incapacity.—1. After a separation under a deed containing a clause whereby each party agrees not to make any claim against the other either at law or in equity.

2. After the death of either party.

3. When the incapacity does not exist at the time of the marriage, but supervenes after its celebration.

4. When there is present incapacity, but a probability of future capacity.

5. When the incapacity can be cured by operation or treatment, and the respondent agrees to submit to such operation or treatment.

6. When the petitioner has, with full knowledge of the facts and law, adopted the marriage, and acted upon it, and treated it as binding.

7. When there has been unexplained delay in instituting the suit.

Of the foregoing grounds 1, 2, and 3 would certainly, and 4, 5, and 6 would probably be held to afford absolute answers to the suit, while 7 would probably be treated as giving the Court a discretion to refuse relief.

RAPE.

Rape is the carnal knowledge of a female by force and without consent. To constitute the offence of rape there must be penetration, but it is not necessary to prove either rupture of the hymen or actual emission. Any penetration of the labia, however slight, will be sufficient.

A child under the age of thirteen years is incapable in law of consenting to the act, and carnal knowledge of such a child, if in the particular circumstances not amounting to a rape, constitutes a felony and is punishable in the same way as rape.

Carnal knowledge of a child above the age of thirteen and under the age of sixteen, if not amounting to a rape, constitutes a misdemeanour unless the accused had reasonable cause to believe that the girl was of or above the age of sixteen, in which case he is not guilty of any offence against the law.

As medical evidence will necessarily be required to support a charge of rape, it is important for the practitioner to bear in mind a few points in connection therewith, more especially as false accusations are quite common. Taylor quotes Amos as stating that for every true case of rape or seduction tried on the Circuits there was an average of twelve pretended cases, and this probably is as true now as when enunciated.

If a female is brought to a medical practitioner to be examined, he must remember that before doing so he must obtain her consent if she is of reasonable age and understands the nature of her consent, and, if not, the consent of her nearest guardian. In girls under the age of twenty-one it is better to have the guardian's consent in all cases. It is better to have the consent in writing, or at any rate in the presence of a reliable witness. A medical practitioner cannot insist on examining a female against her will without rendering himself liable to proceedings for indecent assault.

The practitioner should also make it clear to the complainant if possible, and to the nearest guardian certainly, that any evidence he obtains may be used either in support of or in answer to the charge. Such a statement is desirable in view of the possibility of false charges.

The practitioner should carefully record in writing at the time the results of his examination, including the history of the case, especial attention being given to the following points : [1]—

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[1] Taylor's *Medical Jurisprudence*, 8th edition. Edited by F. J. Smith.

Date and Time the Consultation is Held.—If there be any marked delay in seeking advice, the Court will require to know the reason.

Walk and Mental Condition.—There may be difficulty in walking, from the pain due to injury inflicted. The complainant may be under the influence of alcohol or drugs, or she may be mentally deficient.

What Persons, if any, bring the Complainant to the Doctor.—This may be important, in view of the possibility of a false charge being made.

Statement of the Complainant and her Friends.—Such statements must be recorded verbatim, as they may be of the greatest importance.

The practitioner should elicit the age of the complainant, the date, the time, and the place of the offence, whether the parties were sitting, lying, or standing, whether the complainant cried out or struggled, whether she was menstruating, and whether she was sensible all the time.

The complainant and her clothes should be examined.

Examination of the Clothes.—An examination should be made for traces of blood, mud, grass, or seminal stains, the chemise and drawers being the most likely articles of clothing on which such evidence is discernible. Any article of clothing with stains on should be kept for further investigation.

Examination of the Complainant.—A general examination of the complainant should be made for bruises on her body, their situation and character, and inquiry should be made as to how they were caused. The physique of the complainant should also be noted to determine her powers of resistance.

Great care and circumspection will be necessary in arriving at a definite conclusion from the presence of bruises, stains on the linen, etc., since these may be attributable to causes other than those of rape, and they may even have been caused for the purposes of false accusation.

A careful and thorough examination should then be made of the genital organs, special attention being paid to the vulva, vagina, and mons veneris.

Is the vulva swollen, inflamed, bruised, or torn ; are there any sores in the vulva, venereal or otherwise ; and what is the condition of the hymen ?

Is the vagina swollen, inflamed, bruised, or torn ?

Is there a discharge from the vulva ? If so, a specimen should be taken for further examination (seminal fluid, pus, gonococcus). A gonorrhoeal discharge will not appear sooner than twenty-four hours from the time of infection. Venereal sores will not appear for some days.

If there are hairs on the mons veneris, are they matted ? If so, a

specimen should be cut off for the identification of blood, pus, or seminal fluid.

Is the complainant menstruating ?

The practitioner may be called upon to give evidence in cases of supposed rape of infants and young children, unmarried girls and women, and married women. These three classes need a short and separate consideration.

Infants and Children under Thirteen Years of Age.—In these the local signs of injury may be very apparent, so that if the child is seen within a few hours there may be bruising of the vulva and vaginal opening and laceration of the hymen, perineum, and vagina, or even of the rectum or peritoneum. Blood or blood-clots may be found on the vulva, legs, or linen, there may be a muco-purulent discharge, and the gonococcus may be identified therein.

The presence of such a discharge, however, is not a conclusive proof of rape. Vulvitis in children causing a muco-purulent discharge is not particularly uncommon, and even if it is of gonorrhœal origin this in itself does not prove rape, since the child may have been accidentally contaminated with towels used by infected persons, or—as has actually happened—gonorrhœal pus may have been placed on the vulva to substantiate a false charge.

If the child is not seen until some days after the supposed rape, in addition to the evidence of injury, acute inflammation may be present, accompanied by pain on micturition. After a few weeks all evidence of injury may have disappeared ; and then, on the other hand, the presence of a discharge, gonorrhœal or otherwise, of the signs of syphilis, of soft sores, or of a lacerated hymen, may be of service.

Girls between the Ages of Thirteen and Sixteen.—Between the ages of thirteen and sixteen the consent of the girl is material, inasmuch as the accused, if such consent is proved, can only be found guilty of a misdemeanour, and will be entitled to acquittal if he can satisfy the jury that, from the girl's statements, appearance, or manner, he believed that when she consented she was over sixteen years old. For further comments on the question of consent, see remarks under the next section. Apart from this point of view, the medical evidence will be directed to the local condition as described in the previous section.

Women or Girls over Sixteen Years of Age.—In these cases consent on the part of the woman or girl affords an answer to the charge, and as the use of force is inconsistent with consent having been given, the practitioner, in cases in particular in which consent is material, may be called upon to give evidence of facts tending to show whether or not force has been used, and he should take note of any such facts and be prepared if necessary to give evidence of them.

Further, as the use or absence of force, and the extent of any force used, may be a material element for consideration in all cases of criminal assaults upon women and girls, the practitioner should always, if possible, be prepared to give evidence on this head if required to do so.

Consent.—Before dealing with the question of force it should be pointed out that consent obtained by fraud or false pretences, or in circumstances that show that the complainant was not a free agent, may not constitute a sufficient consent to afford an answer to a charge of rape.

Carnal knowledge submitted to through fear of death or through duress is rape. If a man induces a married woman to permit him to have connection with her by personating her husband, he is guilty of rape.

When an accused, a quack doctor, under the false pretence of performing a surgical operation, had connection with a girl of nineteen, and she submitted to what was done in the belief that what was being done *constituted a surgical operation, and that belief had been fraudulently induced by the accused*, it was held that he was guilty of rape.

A woman may be of such weak intellect as to be incapable of giving any consent, in which case carnal knowledge of her, though she make no resistance, may amount to rape.

Cases of this description are not, however, of common occurrence, and, except in so far as he can speak to the fact of connection, the practitioner who subsequently examines the complainant will probably not be able to give material evidence in regard to them.

As a general rule the practitioner's evidence, in addition to showing whether or not connection has taken place, will be directed to prove facts showing whether or not force has been used by the man or resistance made by the woman.

Connection by Force.—In ordinary circumstances it is at least doubtful whether it is possible to rape a healthy well-developed resisting female, so long as she is able to continue to struggle. Accordingly, in an ordinary case of alleged rape upon a healthy woman of normal strength, injuries or bruises on the body or limbs of the woman may be expected, and the absence of any such injuries would give ground for doubting resistance on the part of the woman, and consequently for suspecting the *bona fides* of the charge. There are, no doubt, cases in which the absence of any injuries is accounted for by the circumstances in which the offence has been committed, as, for example, if the woman has been drugged, if she is under the influence of an anæsthetic or of hypnotism, if she is asleep or half-asleep, if she is held by one person while being raped by another, if she is in such terror as to be incapable of resistance, if she is fainting, weak, or in ill-health. But in an ordinary case of alleged rape of a normal healthy woman the practitioner, if there

be no signs of injury, should carefully consider what, if anything, there is to account for the absence of such signs.

From the medical aspect the cases dealt with in this section may be divided into two classes, namely, single women and married women.

Single Women.—If the woman is not seen for some little time after the supposed rape, the question of whether coitus has taken place may present some difficulty. The evidence of a recent forced coitus or attempt at coitus may be such as is indicated in the preceding sections, but as the vulva and vagina are more developed the injury to them need not necessarily be so marked. In a short time, however, most evidence of this nature will have vanished, but the state of the hymen may or may not afford some assistance in proving the fact of connection but not of rape. As a result of coitus the hymen is usually lacerated in one or more directions. Occasionally a hymen is so soft and dilatable that repeated coitus can take place without injuring it, and in fact there are several cases on record in which a child has been born without any apparent laceration of the hymen.

It has also to be remembered that the hymen may be lacerated by a digital examination of the vagina, by the passage of a speculum for medical purposes, or by the insertion of some other foreign body by unprincipled females, and, as we have stated before, it is not necessary to prove penetration of the hymen to substantiate a case of rape.

Any evidence of childbirth or abortion (see p. 424) having occurred may be useful in considering the statements and *bona fides* of the complainant. In these cases any evidence of gonorrhœa or venereal sores on the vulva might assist in the diagnosis, as also may the presence of pregnancy, or some disease of the uterus and uterine tubes due to gonorrhœal or septic infection.

Married Women.—In these cases the evidence is much more difficult to obtain. The mere fact of coitus having taken place is of course of no value. The evidence here must be directed towards marks or injury due to the resistance of the woman, and the presence of stains on her clothing, especially spermatic stains ; but, the woman being married, such evidence is not of the same importance as with the unmarried.

The presence of recent gonorrhœa or syphilis, the husband being free from such disease, is of some importance, though here again the disease may have been acquired by accidental contamination.

Examination of the Accused.—If the accused requests the practitioner to examine him, the following points are of importance :—

Age, strength, the presence of bruises or scratches, stains on his clothes, the condition of his genital organs as to potency or the reverse, the presence of gonorrhœa, venereal sores, and the matting of the hair.

CRIMINAL ABORTION.

The law dealing with Criminal Abortion is as follows :—

" 24 & 25 Vict. c. 100.   Aug. 1861.

" *Section* 58.—Every Woman being with Child who, with Intent to procure her own Miscarriage, shall unlawfully administer to herself any Poison or other noxious Thing, or shall unlawfully use any Instrument or other Means whatsoever with the like Intent, and whosoever, with Intent to procure the Miscarriage of any Woman, whether she be or be not with Child, shall unlawfully administer to her or cause to be taken by her any Poison or other noxious Thing, or shall unlawfully use any Instrument or other Means whatsoever with the like Intent, shall be guilty of Felony, and being convicted thereof shall be liable, at the Discretion of the Court, to be kept in Penal Servitude for Life or for any Term not less than Three Years,—or to be imprisoned for any Term not exceeding Two Years with or without Hard Labour, and with or without Solitary Confinement.

" *Section* 59.—Whosoever shall unlawfully supply or procure any Poison or other noxious Thing, knowing that the same is intended to be unlawfully used or employed with Intent to procure the Miscarriage of any Woman, whether she be or be not with Child, shall be guilty of a Misdemeanour, and being convicted thereof shall be liable, at the Discretion of the Court, to be kept in Penal Servitude for the Term of Three Years, or to be imprisoned for any Term not exceeding Two Years, with or without Hard Labour."

Most practitioners some time or other are requested by a patient to perform criminal abortion upon her, or are called upon to treat a patient who has either aborted or is aborting as the result of some criminal interference with her pregnancy, either by herself or some other person.

These latter cases come under the notice of the practitioner because, as a result of the measures taken, the patient's life is in danger from hæmorrhage or sepsis,—at times the practitioner being first called when the patient is actually dying from general peritonitis.

The exact course the practitioner should take when face to face with such a case has for years formed the subject of endless discussion.

In 1895 the Royal College of Physicians appointed a Committee to deal with this very subject, and as a result a hypothetical case was stated by the College for the opinion of Counsel, and with the sanction of the Censors of the College we append a statement of this case and the reply received from Counsel.

The case for the opinion of Counsel was stated as follows :—

" The crime of procuring abortion is unfortunately only too common, and a certain set of practitioners are known to practise it somewhat extensively. Of these persons nothing more need be said. They are clearly guilty of felony, and must take the consequences of their acts if found out. The subject is, however, surrounded by difficulties to practitioners of another class, who are not infrequently called in to advise in cases in which they either know or strongly suspect that abortion has been actually procured or has been attempted. In such cases the woman often suffers severely and her life may be at stake, so that the practitioner naturally finds it necessary or desirable to obtain information as to what has actually taken place by any means in his power. This often includes a confession on the part of the woman, given probably under the seal of secrecy, expressed or implied. The first question that suggests itself is whether or not such a communication is privileged, as in the case of a solicitor and client. It is feared that this question must be answered in the negative, and, if so, the further question at once arises as to what is the duty of the practitioner who has obtained such information, whether by confession or otherwise. If he divulges the information so obtained, he would certainly be considered by the woman in question, and probably by her family, to have been guilty of a gross breach of professional confidence, whilst if he keeps the secret it may well be that he will render himself amenable to the criminal law. By simply keeping the secret he may well bring himself within the definition of the offence of misprision of felony, which is said to be ' the concealment of some felony committed by another, but without such previous concert with, or subsequent assistance of, him as will make the party concealing an accessory before or after the fact.' It may well be, however, that in the course of his practice the practitioner may make himself an accessory after the fact, which is itself a felony. An accessory after the fact is said to be one who, knowing a felony to have been committed ' by another, receives, relieves, comforts, or assists the felon.' Now, the woman concerned is as much a felon as the person who operates upon her or administers drugs to her for the purpose of procuring abortion, and it is difficult for a medical man to be of any use to his patients without bringing himself, at all events, within the wording of the definition.

" The branch of the subject above dealt with has been taken first because it is the commonest in practice, but a practitioner is not unfrequently himself solicited to do the unlawful act. There can, of course be no doubt but that his duty is to refuse to have anything to do with the matter, but does his legal obligation end there ?

" Sometimes the woman in effect says, ' If you will not do it, I shall get it done by some one else,' and perhaps she may name the person. Or, after having been solicited to procure the abortion, and having refused. the practitioner may hear or be made aware that the woman has had a ' miscarriage ' ; in other words, he knows, or is morally certain, that an illegal operation has been performed.

" Or a woman on whom he is in attendance may admit that on previous occasions she has herself had one or more abortions procured in the past. In such cases, if the practitioner does nothing, it seems unlikely that he would thereby make himself an accessory before the fact, the definition of such accessory being ' one who, being absent at the time when the felony is committed, yet procures, counsels, or abets another to commit a felony ' ; still he may perhaps be guilty of misprision of felony and punishable accordingly.

" Another class of cases gives rise to somewhat different considerations. It not unfrequently happens that a medical practitioner who is in attendance on a woman during her pregnancy or at her confinement, becomes convinced that she will almost certainly die unless the child is in some way got rid of. He sees that unless something of the sort is done both mother and child may perish, but that the former can be saved at the expense of the destruction of the latter. In such a case the question arises as to whether he is legally justified in destroying the child to save the mother. In practice such action is not uncommon, but that does not seem to affect its legality.

" Counsel will please advise the College :—

" 1. Has a medical practitioner any privilege with regard to secrets confided to him in the course of his practice analogous to the privilege as between a solicitor and client, or otherwise ?

" 2. What is the duty of a medical practitioner who knows or believes he is in attendance in a case in which criminal abortion has been practised ? And is there any distinction to be drawn between the several cases mentioned above ?

" 3. Does the law forbid the procurement of abortion during pregnancy for the purpose of saving the mother's life ?

" 4. Does it forbid the destruction of the child during labour where such destruction of life is necessary to save the mother's life ?

" 5. In the event of questions 3 and 4 being answered in the affirmative, is a medical practitioner blameless if, in order to escape the risk óf prosecution, he refrains from rendering assistance, and thus deliberately sacrifices the life of the patient when he could save it either (a) by inducing abortion, or (b) by destroying the child during labour ?

" 6. If it were desired to procure the alteration of the law, what would be the best mode of procedure ?

" 7. To advise generally on the case."

The answers were as follows :—

" 1. We are of opinion that there is no privilege attaching to statements made to a medical practitioner by his patient.

" 2. We are of opinion that it is the duty of a medical practitioner who knows or believes that he is in attendance in a case where criminal abortion has been practised, to attend his patient to the best of his skill, and that he does not thereby render himself liable as an accessory after the fact, so long as he does nothing to assist the patient in escaping from or defeating justice. (See 1 Hale, 332.) We do not think the medical practitioner is liable to indictment for misprision of felony (an offence which is nearly obsolete) merely because he does not give information in a case where he *suspects* that criminal abortion has been practised. In the case suggested, where the name of the person is given who is going to commit such an offence, we think it is the duty of the medical practitioner at once to warn such person that such a statement has been made.

" 3, 4, and 5. We are of opinion that the law does not forbid the procurement of abortion during pregnancy, or the destruction of the child during labour, where such procurement or destruction is necessary to save the mother's life.

" 6. If we are right in our views, no alteration of the law would probably be desired.

" 7. The duty of the medical practitioner as to giving information in particular cases, or as to his action where the life of the patient is in danger, must, we think, be exercised according to his discretion.

<div style="text-align:right">" (Signed)   EDWARD CLARKE,
HORACE E. AVORY.</div>

" TEMPLE, *January 29th,* 1896."

After a careful perusal of the answers returned by Counsel, we (the authors) are of opinion that they fail to give the necessary assistance to practitioners which they really most require. In " answer 2 " the practitioner is informed that he will not be liable to indictment for misprision of felony " merely because he does not give information in a case where he *suspects* that criminal abortion has been practised."

But what if the practitioner *knows* that criminal abortion has been practised ? From the first part of " answer 2 " it might be argued that in this case he should give information, since by not doing so he is assisting the patient in escaping from or defeating justice ; whilst the inference from the second part is that in cases in which he *knows* he is liable to indictment.

On the other hand, in " answer 7 " the medical practitioner is informed that " in particular cases," or " where the life of the patient is in danger," he must exercise his own discretion whether he gives information or not.

The following very important observations made in a case by Mr.

Justice Avory, one of the signatories to the opinion of Counsel quoted above, should be studied in this connection :—

" The woman," he said, " died as the result of an illegal operation performed upon her. Three medical men in succession attended her, and to one at least she confided the name of the person who had performed the act. No information was given to the police or the authorities, and the woman died without deposition being taken or without any statement being made by her on her death-bed which could be used in a court of law. With the exception of a letter which was found amongst deceased's papers, apparently making an appointment with the accused woman, there was no evidence against the prisoner, and the magistrates, taking that view, dismissed the charge. He need not remind them that any statement made to the medical man was not evidence in a court of law.

" He felt it his duty to tell the grand jury that he could find no evidence which would justify them in finding a true bill against the prisoner.

" The law," continued his Lordship, " provided that in the case of any person who was seriously ill, and who in the opinion of the medical man was not likely to recover, the evidence of such a person might be taken by a justice of the peace. Under such circumstances as those of the present case, he could not doubt that it was the duty of a medical man to communicate with the police or with the authorities, in order that steps might be taken for the purpose of assisting in the administration of justice.

" No one would wish to disturb the confidential relations which existed between the medical man and his patient, and which ought to exist in order that the medical man might discharge his duty properly towards his patient, but there were cases—and this was one—where the desire to preserve that confidence must be subordinate to the duty which was cast upon every good citizen, to assist in the investigation of a serious crime such as was imputed to this woman.

" Apart from this particular case, he had been moved to make these remarks because it had been brought to his notice that an opinion, to which he was a party some twenty years ago, when he was at the Bar, had either been misunderstood or misrepresented in a text-book of medical ethics, and he was anxious to remove any such misunderstanding if it existed.

" It might be the moral duty, even in cases where the patient was not dying, to communicate with the police when a medical man saw good reason to believe that a criminal offence had been committed. However that might be, he could not doubt that in such a case as the present it was the duty of some one of the medical men to take some action."

From these remarks it will be seen that, in the opinion of this judge, though there is no *legal* obligation for the practitioner to give information in any case, yet in certain cases, at all events, it is his *moral* duty to do so, and that the onus of deciding what to do in any given case is thrown upon the doctor,—an unsatisfactory state of affairs, for we call to mind an instance in which a practitioner incurred considerable professional criticism because, on a patient making a confession to him, he had reported the facts to a magistrate.

Since the delivery of this opinion the Royal College of Physicians of London, after considerable deliberation, issued, on 15th July 1915, the following report :—

DUTY OF THE MEDICAL PRACTITIONER IN CASES OF CRIMINAL ABORTION.

The College is of opinion :—

1. That a moral obligation rests upon every medical practitioner to respect the confidence of his patient ; and that without her consent he is not justified in disclosing information obtained in the course of his professional attendance on her.

2. That every medical practitioner who is convinced that criminal abortion has been practised on his patient, should urge her, especially when she is likely to die, to make a statement which may be taken as evidence against the person who has performed the operation, provided always that her chances of recovery are not thereby prejudiced.

3. That in the event of her refusal to make such a statement, he is under no legal obligation (so the College is advised) to take further action, but he should continue to attend the patient to the best of his ability.

4. That before taking any action which may lead to legal proceedings, a medical practitioner will be wise to obtain the best medical and legal advice available, both to ensure that the patient's statement may have value as legal evidence, and to safeguard his own interests, since, in the present state of the law, there is no certainty that he will be protected against subsequent litigation.

5. That if the patient should die, he should refuse to give a certificate of the cause of death, and should communicate with the coroner.

It will be noticed that there is a direct conflict between the opinions expressed in this report and that of the eminent judge previously quoted; the College apparently holding that the whole duty of the medical man lies with his patient, the jurist that he owes a moral duty to the State as well.

There is, however, a third point of view which neither authority seems to have sufficiently considered, namely, the practitioner's duty to himself, to protect his fair name from the chance of unjust suspicion or accusation, though in section 4 of the report of the College it is specifically stated that in the present state of the law there is no certainty that in these cases he will be protected against subsequent litigation.

Of the various offences against the law that might come to the knowledge of a medical man in the course of professional attendance, criminal abortion is peculiar in this respect, that it is the only crime which, as a result of his attendance, he may be suspected of or charged with.

By the death of the woman he loses the chief source of testimony to the fact that he is innocent, nor can he, if the patient is going to die, protect her reputation by silence, as the inquest will make public her complicity in the crime.

It is on these grounds, much more than with the object of securing the conviction of the abortioner, that we are of opinion that in certain circumstances the rule of professional secrecy ceases to apply.

The occasions, however, upon which such infraction of professional secrecy is advisable and justifiable require very careful consideration; for in the absence of the patient's consent, the disclosure of knowledge obtained in the course of his professional attendance may involve the practitioner in an action for slander or libel.

We strongly counsel the practitioner, as far as he may be able, to have nothing to do with these cases, even those he is only suspicious of. This unfortunately is not always possible even though he exercise the greatest circumspection.

We shall therefore proceed to consider his advisable course in

the various circumstances that may attend such cases. We would, however, premise that the points of our counsel are not laid down as propositions of law, but as the best advice the authors can give to a practitioner who finds himself in attendance upon a case in which abortion appears to have been or has been practised in view of the position in which he may be placed having regard, on the one hand, to the possibility of his own conduct in the matter being called in question, and, on the other hand, to the difficulties created by the law of libel.

Before passing, however, to the consideration of these circumstances, there is one proceeding for the safeguarding of the practitioners' reputation on which we would most strongly insist, namely, that *in every case in which he suspects or knows that abortion has been practised he should keep full notes of the case*, not merely a brief jotting in his visiting list or appointment book, but a detailed account written day by day in his daybook, wherein he should set forth the facts on which his suspicion or knowledge is grounded.

His further action will depend upon the circumstances attaching to the particular case as follows :—

1. *The practitioner has* **grounds for believing** *that abortion has been self-procured, and her life is* **not** *in immediate danger.*

He may continue to attend the case, or decline further to attend it, as he thinks fit.

2. *The practitioner* **knows** *that abortion has been self-procured, but the patient's life is* **not** *in immediate danger.*

He would be justified in refusing to attend the case, unless the patient either allows him to inform her husband or some responsible relative, or agrees to a second medical man being called in and the full facts of the case being disclosed to him.

3. *The practitioner* **either has grounds for believing** *that abortion has been self-procured, or* **knows** *that abortion has been self-procured, and the patient's life is in* **immediate danger.**

His advisable course will vary with the exact circumstances of the case as follows :—

(*a*) The patient has full possession of her mental faculties, and agrees to the full facts of the case being disclosed to another medical man, or to her husband or other responsible relative.

This should be done.

(*b*) The patient has full possession of her mental faculties, and refuses to allow another medical man being called in to see her to whom the full facts of the case shall be disclosed, or to allow the practitioner to inform her husband or other responsible relative.

We think that for his own protection the practitioner

may communicate in confidence the facts of the case to another medical man without, however, necessarily mentioning the name of the patient.

(c) The patient has full possession of her mental faculties, and refuses to allow her husband or other responsible relative to be told, and there is no other medical man in the district to whom the matter can be communicated.

We think that the practitioner must continue attending the patient, but for his own protection he may write confidentially to another medical man (preferably to a consulting gynæcologist) informing him of the facts of the case, but not necessarily of the name of the patient.

(d) The patient is not in possession of her mental faculties, and a consultation with another medical man is possible.

Such a consultation should be held, and the facts of the case should be communicated to the second medical man.

(e) The patient is not in possession of her mental faculties, and a consultation with another medical man is impossible.

The practitioner should act as described under 3 (c).

4. *The practitioner* **has grounds for believing** *or* **knows** *that abortion has been self-procured, and the patient is dead.*

He should report the facts of the case to the coroner and take his advice as to whether he should sign the death certificate or not.

5. *The practitioner has* **grounds for believing** *that abortion has been procured by a third party, but the patient's life is* **not** *in immediate danger.*

The practitioner should act as described under 1.

6. *The practitioner* **knows** *that abortion has been procured by a third party, but the patient's life is* **not** *in immediate danger.*

The practitioner should act as described under 2.

7. *The practitioner has* **grounds for believing** *that abortion has been procured by a third party and her life is in* **immediate danger.**

The practitioner should act as advised in the varying circumstances detailed under 3.

8. *The practitioner* **knows** *that abortion has been procured by a third party, and the patient's life is in* **immediate danger.**

It is in such a case as this that the Council of the College of Physicians advises the practitioner to urge the patient to make a statement, provided always that her chances of recovery are not thereby prejudiced. If the patient refuses to make such a statement, the Council of the College is advised that in such circumstances the practitioner is under no legal obligation to take further action, but he should continue to attend the patient to the best of his ability.

We are in general agreement with this advice, but we must point out that the Council does not deal with the position of the medical man and the steps that he may properly take with a view to his own protection in the matter.

We would also point out that the statement the patient is urged to make for the purpose of being used as evidence would not be admissible as evidence unless it either constituted a dying declaration (see p. 423) or was made upon oath before a magistrate after sufficient notice to or in the presence of the person accused of having procured the abortion, and that person or his representative had full opportunity of cross-examining the patient.

We now proceed to consider the advisable course to be adopted by the practitioner according to the circumstances of the case.

(*a*) The patient is in full possession of her mental faculties, and agrees to make a statement.

The practitioner should arrange for the statement to be taken.

If the statement is made to, or in the presence of, a magistrate or other responsible third person (if possible this should always be done), no further steps need, we think, be taken by the practitioner for his own protection.

If, however, it be merely made to the practitioner he should take it down in writing and get the patient to sign it after it has been read over to her. In this case the practitioner should as an additional precaution communicate confidentially the facts of the case to another medical man.

(*b*) The patient has full possession of her mental faculties, but, while refusing to make a statement, agrees to the full facts being disclosed to another medical man or to her husband or other responsible relative.

The practitioner should act as advised under 3 (*a*).

(*c*) The patient is in full possession of her mental faculties, and refuses to make a statement or to allow her husband or other responsible relative being told, and there is no other medical man in the district to whom the facts of the case can be communicated.

The practitioner should act as advised under 3 (*c*).

(*d*) The patient is in full possession of her mental faculties, and refuses to make a statement or to allow another medical man being called in to see her to whom the full facts of the case shall be disclosed, or to allow the practitioner to inform her husband or other responsible relative.

The practitioner should act as advised under 3 (*b*).

(e) The patient is not in possession of her mental faculties, and a consultation with another medical man is possible.

A consultation should be held, after which the husband or other responsible relative should be informed, so that on the one or other should devolve the responsibility of informing the proper legal authorities.

(f) The patient is not in possession of her mental faculties, and a consultation with another medical man is impossible.

The husband or other responsible relative should be informed, so that on the one or other should devolve the responsibility of informing the proper legal authorities.

9. *The practitioner* **has grounds for believing** *or* **knows** *that abortion has been procured by a third party, and the patient is dead.*

The practitioner should act as advised under 4.

10. *The practitioner has information from a patient that she intends to abort herself.*

He should warn her against the act, and refuse to have anything further to do with her case.

11. *The practitioner has information from a patient that she intends to have abortion procured.*

He should warn her against the act, and refuse to have anything further to do with the case. If she has given the name of the doctor who, she says, is willing to procure the abortion, we think it is the practitioner's duty immediately to inform such doctor of the statement.

Two other points require mentioning.

A woman who is pregnant may consult a practitioner and purposely mislead him with a history that she is perfectly regular with her periods, or even that these are excessive, in the hope that he will pass a sound for diagnostic purposes. As we have remarked when dealing with this instrument, there are very few, if any, occasions in which it is necessary to pass a sound for the purpose of diagnosis, and that a careful bimanual examination will in most cases obviate the use of the sound.

Again, a woman may have some instrument passed or drug given by an abortion-monger and then consult a doctor in the hope that he will use instruments (sound, speculum) upon her for the purpose of diagnosis. If a miscarriage now ensues she can assert that it was due to the instruments the doctor used.

If a patient dies as a result of a criminal miscarriage the practitioner will be called upon to give evidence :—

1 As to any confession of the patient or information he has acquired.

2. As to whether there is any evidence on post-mortem examination of the criminal nature of the abortion.

Statement of the Patient.—The evidence of a patient who is seriously ill may be taken in one of the following ways :—

(1) A magistrate may visit her to receive her deposition on oath   If possible, facilities for being present should be given to the accused person or his representative.

(2) Should the patient be firmly convinced that she is dying—and only in these circumstances may she make a dying declaration —such a declaration may be made to the medical practitioner or to any other person.   It need not be witnessed by a third party, nor signed by the patient, though it is desirable that both should be done.   It may be verbal or in writing, but if opportunity offers the practitioner should take it down in writing.   The statement will not be admissible in legal proceedings unless it is clearly shown that at the time the patient made it she believed that she was dying, and made the statement in the expectation of imminent death, and it will then only be admissible where the death of the deceased is the subject of the criminal charge.

Evidence on Post-Mortem Examination.—If the abortion has been accomplished by means of some drug and the patient dies, the post-mortem evidence will be directed towards the fact first of all that she had recently been pregnant, and, secondly, that there may be evidence of poisoning in other parts of the body by that particular drug, or evidence of local traumatism.

Drugs.—Apart from those cases in which the uterus is very irritable and the slightest stimulation will encourage it to empty its contents, abortion from the use of drugs is not likely to be successful, unless the patient herself is *poisoned* by the drug.

The best example of this is perhaps abortion due to the ingestion of lead.

It is unhappily a common custom in the Midlands, and doubtless elsewhere, for women to procure pills made of diachylon plaster for the purposes of criminal abortion, and as the result of such administration, self or otherwise, deaths are reported from time to time, due entirely to lead poisoning and not as a fact to the abortion which the lead has procured.

It has always to be remembered that the patient may be working in a factory where lead or some other chemical is made or used which may lead to an abortion irrespective of the wishes of the mother.

Local Signs of Trauma and its Results.—An examination of the vagina, cervix, or body of the uterus may disclose some injury, generally in the nature of a punctured wound which is very likely sloughing, and which may be an indication that some instrument has been used to

procure the abortion ; or the vagina may be highly inflamed as the result of some irritating chemical douche.

As nearly all these cases die of sepsis, and most generally of septic peritonitis, the presence of this condition, or of a sloughing uterus, or of salpingitis would be an indication of some infection, though it does not necessarily follow that the infection is due to criminal abortion,—it may be due to a septic miscarriage (non-criminal), to gonorrhœa, or to some other cause which is apparent.

Again, if the pregnancy has advanced sufficiently, the body of the child may disclose marks of injury due to the use of some instrument.

As a rule the criminal who practises abortion knows that there is the least risk to the woman if the uterus is emptied in the first two months of pregnancy, since in these cases there is not that danger of hæmorrhage or sepsis resulting from a retained, or pieces of a retained, placenta which is present at a later date. Moreover, even if he does not know this he will not, unless very desperate, make any attempt after the fourth month, either refusing to have anything to do with the woman, or advising her—as in one case that came to our notice—to wait till the eighth month, when he would induce premature labour which would be without danger, and then the mother was to " overlie " her child, who would be very weak and so easily killed !

The practitioner therefore, if called upon to give evidence of the post-mortem condition of the genital organs, will in most cases have to deal with a three months' miscarriage, or less. For the points to be observed in this relation, the practitioner is referred to the next section.

EVIDENCE OF PREGNANCY, PRESENT, RECENT, OR REMOTE, OR OF DELIVERY.

The practitioner may be called upon to give evidence in cases of rape, murder, suicide, death from some unknown cause, or infanticide, as to the condition of the genital organs, either to establish the fact of pregnancy or of recent or remote delivery, when such is deemed by the corcner to have some bearing upon the case.

He may also be called upon to give evidence in a case when a woman has been condemned to death and endeavours to escape hanging by the statement that she is pregnant ; or his opinion may be wanted as to whether a woman has had a child either recently or remote in a case in which for the purpose of blackmail she is endeavouring to foist a child upon a particular man, or when the husband and wife are fraudulently endeavouring to substitute an heir to an estate.

The Woman is Pregnant.—If the woman is alive, the practitioner

will form his conclusions from the symptoms and signs discussed on page 131. In very early cases, if there is a doubt, the practitioner may decline to give any opinion until a later date, or may endeavour to obtain assistance from Abderhalden's test, though it is not likely that this would be accepted in a court of law.

If the woman is dead, the post-mortem examination will disclose the fœtus in the uterus.

Recent Delivery.—Signs of recent delivery are more apparent in a primigravida than in a multipara, and the nearer to term the pregnancy advanced the more marked will be the indications; thus, after a full-time labour, there is as a rule no difficulty in establishing a recent delivery in the first two weeks of the puerperium. On the other hand, great difficulty may be experienced if the uterus has been emptied before the fifth month.

Taking a full-time labour as the standard, if the woman has lost much blood or her labour has been very prolonged or septic, she may look ill. The abdomen is lax, striæ gravidarum may be noted, and a line of pigmentation will be seen running from the pubes to the umbilicus. Milk or colostrum may be expressed from the breasts. The uterus can be felt on abdominal examination. The cervix will be soft, and so dilated that the finger be passed into the uterus for some few days following delivery. The vulval orifice will be bruised, the hymen will be deeply torn, and there may be lacerations present, especially in the perineum.

If the patient is examined within a few days following delivery, lochia may be escaping from the vulva.

Abderhalden's test is said to be positive for the first ten days following delivery.

If the woman is dead and the genital organs are further examined, a laceration may be found in the cervix, and the placental site can be identified in the uterus, being a slightly raised surface about 4 inches square, thicker and darker than the rest of the uterine wall, and containing thrombosed sinuses.

It is evident that if delivery has taken place before the abdominal wall is stretched, and whilst the fœtus is quite small, certain of the evidence quoted above will not be present. On the other hand, the extraction of a fibroid tumour through the vulva may cause local injuries of a kind similar to those of the passage of a child's head, but in such a case the history would be sufficient to interpret the condition.

In early cases the only evidence of any use might be the post-mortem examination of the uterus, when the increased size, signs of a placental site, or the presence of a piece of placenta, might give the answer. But here again too much reliance must not be placed upon the discovery of a piece of placenta, as a notorious case some few years ago proved. In

this case an obstetrician operated upon a lady for hæmorrhage and removed a piece of placenta. On its discovery he was led to inform a third party, a mutual relative, that the lady had recently had a miscarriage. As the lady had not seen her husband for over a year, such a statement naturally led to a great deal of unpleasantness, with the result that the lady brought an action against the obstetrician and obtained £10,000 damages, the jury having been satisfied, by the evidence of several authorities who were called, that a piece of placenta might be retained in the uterus for over a year without giving rise to any particular symptoms. The lady had had a miscarriage over a year prior to the operation.

Remote Delivery.—It may be impossible for the practitioner to give a definite opinion as to whether the woman has or has not had a child if more than a year has elapsed since the alleged occurrence.

If the abdomen has been much stretched, and the cause is removed, white lines, known as lineæ atrophicæ, can be seen on the abdomen. As the commonest cause of marked stretching is pregnancy which has advanced beyond the sixth month, lineæ atrophicæ in most cases denote that a child beyond that time has been delivered. Extreme adiposity, or an ovarian, uterine, or other tumour may, however, lead to the same appearances.

The commonest object to be expelled through the vaginal orifice large enough to markedly stretch or lacerate it is the child's head, and in most cases also the hymen will be found to be represented only by a few tags known as carunculæ myrtiformes.

Very rare cases are on record in which the child has been born without even lacerating the hymen, and in a short time it has been impossible to tell that any object has been expelled.

In the earlier months of pregnancy the evidence of such injury need not be apparent.

The cervix of the uterus is usually lacerated by the passage of the head of a full-time child. The smaller the child, the less likelihood of laceration.

A similar appearance may be caused by the extraction of a fibroid tumour, or the cervix may be lacerated as the result of the operation of dilatation.

The body of the uterus will not disclose any evidence of pregnancy unless it can be examined post-mortem. Distension of the uterus enlarges it and alters its shape, so that from being pyriform it becomes globular, the fundus in the first case being level with the uterine tubes, and in the second raised above their level ; but as there are several conditions which will enlarge the uterus other than pregnancy, much reliance cannot be placed upon these signs.

Definite signs of delivery may be detected for a year after delivery, in that the placental site, with its pigmentation, thickened arteries, and remains of sinuses, can be identified.

FOREIGN BODIES ACCIDENTALLY LEFT IN THE VAGINA, UTERUS, OR ABDOMINAL CAVITY.

The following is a list, necessarily incomplete, of foreign bodies that have been left in the vagina, uterus, or abdominal cavity :—

Vagina.—TAMPONS.—It occasionally happens that in operations upon the uterus, such as dilatation of the cervix, curettage, etc., the vagina is packed with tampons, and these have to be removed the next day. The practitioner may remove them himself, or direct the nurse to do so. A careful note should be made of the number of tampons inserted, for it has happened before now that the number was not noted or was forgotten, with the result that one tampon was left in.   Again, if the tampon is not well made, a piece of it may break off or the string to which it is attached may break.

In such cases an offensive discharge may supervene and the patient become infected, and perhaps the tampon is not discovered until a further operation is thought necessary to discover the cause of the sepsis.

PESSARIES.—A pessary is not accidentally left in the vagina, as it is put there with a set purpose.   The practitioner must remember, however, to tell the patient that he has inserted a pessary, and make her understand that it should be removed every three months for cleansing and readjustment, and that during this period a vaginal douche must be administered once daily, to prevent the discharge caused by the pessary from becoming septic.   Likewise a pessary should be at once removed if it is causing discomfort or pain.

The patient may, however, express entire ignorance of the fact that a pessary has been inserted, and this for two reasons.   On the one hand, such ignorance, though difficult to understand, may be entirely *bona fide* if the pessary was inserted as part of the treatment when the patient was under an anæsthetic, and she was not given any directions with regard to its subsequent treatment.

Such a case occurred to one of our colleagues who dilated the cervix of a patient complaining of dysmenorrhœa and sterility, and afterwards inserted a stem pessary. It was contended in court, and the judge and jury believed the statement, that the patient was informed of the presence of the pessary, and was told both by the surgeon and house surgeon to return in a short time to have it removed. This the patient neglected to do ; her dysmenorrhœa was cured, and some months

later she became pregnant. When pregnancy was advanced to a few weeks, the presence of the stem pessary was alleged to have caused a miscarriage. The husband and wife brought an action against the surgeon and lost it.

In most hospitals now—as the result of this case—the patient has to sign a form stating that she knows a pessary has been inserted, that a daily douche is necessary, and that the pessary will have to be removed in a certain time.

In private practice, if the pessary has been inserted under an anæsthetic, the same procedure may be advisable, for ignorance that a pessary has been inserted may be expressed in order that the practitioner may be blackmailed.

Uterus.—After certain operations on the uterus it may be necessary to pack this organ with gauze or some other material to arrest the oozing of blood. This packing is removed the next day. If a piece of this packing breaks off and the shortage is not recognized, the piece left becomes septic, and the patient may be seriously ill before the cause is determined.

In the operation of pan-hysterectomy some operators push a small sterilized swab from the abdomen into the vagina so as to prevent the peritoneal cut surfaces from becoming infected with any vaginal discharge that may be present. This swab is removed per vaginam at the close of the operation. It has happened that this swab has been forgotten, with a resulting sepsis.

After the child, placenta, and membranes have been delivered in Cæsarean section, the surgeon will occasionally place a swab wrung out of boiling water into the cavity of the uterus to stimulate it to contract, more especially in those cases in which the uterus is not retracting well and hæmorrhage is continuing. The swab is removed after a few sutures have been inserted. We have known such a swab forgotten, and the uterine and abdominal wound closed, with the swab left in the cavity of the uterus.

Abdominal Cavity.—The following articles have been left in the abdomen in the course of an abdominal operation : gauze packing, gauze sponges, marine sponge, forceps, piece of an instrument that had broken, a pair of spectacles, a pair of scissors, drainage tube, catheter, clamp, hæmostat. Crossen gives a list of reported cases in which a foreign body was found in the abdomen. In 172 cases sponges, gauze, or swabs were left in the abdomen. The results are given in 132 of these, and 83 recovered, whilst 49 died. Of 50 cases reported in which forceps or other instruments were left, and of which the results are given, 18 recovered and 14 died. In about one-fourth of the recorded cases instruments were left behind.

RESULTS.—In some instances the patient has died in three or four days of general peritonitis. In others death has been delayed to a later period, an abscess having formed round the foreign body, which has eventually been discharged through the rectum, bladder, vagina, abdominal parietes, or buttocks. The patient has recovered or not as the case may be, the foreign body has been removed at a second operation, or it has ulcerated into some blood vessel, causing death from hæmorrhage.

PROPHYLAXIS.—The circumstances in which such foreign bodies are likely to be mislaid are those of urgent cases, when an operation has to be performed and concluded as quickly as possible, the condition of the patient not warranting an operation of any length. In cases in which there is sudden and severe hæmorrhage and means have to be rapidly used to arrest it, there is danger of a swab or forceps being forgotten. Less frequently, in patients with very distended bowels, who do not take the anæsthetic well, or in whom the anæsthetic is given badly, with the result that there is great difficulty in keeping the intestines from occluding the operation area, one of the swabs used in retaining the bowels may be overlooked.

Again, the nurse, unless she has been particularly warned not to do so, may cut a swab in two to provide the surgeon with a smaller one or an additional one, and this being forgotten half a swab is counted as a whole one.

In other cases swabs have been lost by being dropped in a vessel which has been used to collect fluid evacuated from the abdominal cavity, which fluid is then thrown down the sink, together with the swab, by the nurse. Of course, in this case, the swab is not left in the abdomen, but we mention it here because if such a thing happens unknowingly the surgeon may spend a long time searching for the lost swab in the abdomen, which will not do the patient any good, and the loss will certainly be a source of great mental distress to the operator for some time.

If, however, the surgeon in addition to always using the same number of swabs, gives strict orders that they are never to be thrown away or cut, and at the conclusion of the operation has both them and the instruments brought to him and counts them himself, then such an accident as that under discussion is practically impossible.

RESPONSIBILITY.—Such a course of procedure is, of course, quite easy in private operations, and should certainly be carried out in every case. When, however, we come to discuss operations at a hospital, the matter has to be looked at from a somewhat different point of view. Is the surgeon—when he has at his disposal highly trained theatre and instrument sisters—to be counted as responsible for the proper number of

swabs and instruments ?   We do not think that he should be expected
to exercise complete supervision in this respect.   When it is remembered
that on a busy afternoon a surgeon may be called upon to perform three,
four, or five serious and often very difficult abdominal operations, with
the assistance perhaps of a newly appointed house surgeon, that difficult
points may arise during the operation requiring immediate decision, that
he has a certain number of dressers to train and perhaps visitors to whom
courtesy prompts him up to a point to describe what is taking place, he
should not be expected to be responsible for the correct number of swabs
and instruments.   Nevertheless, he will be a wise man if—as a fact—he
counts the swabs and instruments, or asks the sisters to count them in
front of him, before the abdominal cavity is closed.

The decisions given in the law courts have varied in different cases and
in different countries.   In some cases the nurse has been held account-
able, and through her the nursing home or hospital.   In others the
surgeon has been held to blame, it being successfully maintained that he
was guilty of want of reasonable care, that the nurse was employed by
the surgeon and under his control during the operation, and that the
counting of the sponges was a vital part of the operation.

The results of the lawsuits in the recorded cases are not always
stated, but while in many cases the surgeon has been acquitted, in some
heavy damages for sums up to £10,000 have been assessed against him,
and a few have been imprisoned.

BLACKMAIL.—There are numerous cases on record in which surgeons
have been threatened with lawsuits by the husband or patient with the
object of procuring damages for having left certain articles in the
abdominal cavity or vagina.   Neugebauer draws particular attention
to such blackmail having been attempted by several people after the
trial of Professor Kosinski in 1897, when during the removal of an
ovarian cyst two pairs of artery forceps were left in the abdominal
cavity.   This trial excited great popular comment at the time, and
Neugebauer compiled his list for the trial.[1]

These cases are generally quickly detected, because the swab, gauze,
instrument, or needle, as the case may be, has generally been found to
be of a different material or pattern to that which the surgeon has used.
The practitioner, however, must be on his guard in such cases.

CLAIMS FOR COMPENSATION.

The practitioner may be consulted concerning the relation borne
by some disease or displacement of the genital organs to an accident

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[1] Crossen, *Diseases of Women* (H. Kempton, 1913), p. 931.

incurred in the course of paid employment. Such cases are not at all uncommon, the object of the patient being to obtain compensation for her real, imagined, or alleged injury.

As the medical man will very likely be asked to give a report on the case or to appear in court either on behalf of the plaintiff or defendant, it is very necessary that he should have some general idea as to the extent to which an accident is capable of causing symptoms referable to the genital tract.

Any one who has had much experience of out-patient departments is well acquainted with the type of patient in receipt of a weekly payment from an insurance society whose protean aches and pains are never-ending and whose exaggerated illogical complaints, coupled with an appearance of good health, mark her out as a malingerer. This sort of person is increasingly common. It therefore behoves the practitioner to inquire very carefully into each individual case, for to support the claims of people of this class is to bring odium on the profession.

Of course each case has to be decided on the peculiar circumstances attaching to it, and it is obviously impossible to lay down any general rules of hard-and-fast application. The following considerations will, however, we hope prove useful.

Accidents in Relation to Wounds.—As the result of an accident some portion of the genital tract may be wounded.

Such wounds are usually the result of the parts striking some hard object, but it is worthy of note that a few cases are on record in which the vagina spontaneously ruptured as the result of a violent physical shock. In all of them the patient had previously suffered from prolapse.

Accidents in Relation to Displacements.—Claims arising in connection with displacements of some part of the genital tract are very common. The usual story is that the patient either after a fall or sudden strain " felt something give way," followed by pain, discomfort, or bearing down.

That violent strain may occasionally give rise to a displacement is probably true, especially in cases in which weakness of the sustentacular apparatus already exists. On the other hand, it is to be remembered that displacements of the genital canal are extremely common and that it is only in a very small proportion that the condition can be traced to a traumatic source.

In endeavouring to decide whether the displacement was really caused by the fall or strain, the practitioner must compare the symptoms complained of with the condition found.

The larger proportion of these patients give an account of their alleged sufferings so exaggerated and illogical that the practitioner has no difficulty in at once deciding that they are either not speaking

the truth or that at all events their aches and pains bear no reference to the displacement found.

When, however, the patient's story corresponds with what might reasonably be expected supposing her to have suffered the injury she alleges, the case in her favour is strengthened.

Thus sudden traumatic retroversion is followed by a sense of weight, bearing down, and backache, all of which are much accentuated at the time of the period. The appearance of this type of dysmenorrhœa (see p. 98) following a shock or strain is very suggestive of a causal relation.

Again, in true traumatic retroversion it is common for bleeding from the uterus to occur so that the period is anticipated, prolonged, or rendered irregular or excessive.

The finding of an acute retroversion in a nullipara is much more suggestive of traumatic origin than in the case of a woman who has borne children, and the same may be said of a woman who, apart from the displacement, presents no other evidence of tissue laxity.

Of the various displacements that come under the head of "prolapse" the same may be said—that when they exist in a nullipara they are much more likely to be traumatic than in the case of a parous woman, though it is not to be forgotten that a congenital type of " prolapse " occasionally occurs.

Inversion and eversion of the vagina (see p. 346) are probably never consummated instantaneously, as is occasionally the case with retroversion, but are progressive over months or years.

It is a fact that a considerable degree of vaginal laxity may exist without troubling the patient, and in such a case a shock or strain, by suddenly increasing it, may bring it to the patient's notice as some new thing.

The pain of all downward displacements should be abolished by recumbency, and with backward displacements considerable relief is thereby obtained.

The patient who states that her sufferings are continuous, " keep her awake at night," etc., is not suffering from the effects of a genital displacement.

Another very frequent complaint in this connection is coccydynia, a condition very commonly associated with marked neurosis, hypochondriasis, or malingering. Certain of these cases do present evidence of dislocation or fracture of the coccyx, and in such the relation to the accident is quite possible. When, however, no such evidence exists, the vast probability is that it has nothing to do with it.

It occasionally happens that a woman four months pregnant may meet with some accident which causes increased intra-abdominal pressure and thus drives the uterus backwards below the promontory of

the sacrum, the size of the uterus preventing it righting itself when the pressure was released. The diagnosis of an impacted retroverted gravid uterus usually presents no difficulty, and we need not discuss it further except to remark that this method of impaction is extremely rare, such a condition being usually secondary to a previous retroversion.

Accidents in Relation to Inflammatory Conditions.—No ordinary accident is capable of directly causing an inflammatory condition of the genital tract. It is possible that, in a person already suffering from some chronic or quiescent infection, a violent blow or jar might light it up into acuteness. The evidence in favour of such an event would need to be very convincing. If there is a vaginal discharge this should be examined for the presence of gonococci.

Accidents in Relation to New Growths.—Though certain new growths (periosteal sarcomata) may originate at the seat of and in consequence of trauma, there is no evidence that a similar occurrence is possible in the case of the female genital organs. On the other hand, a patient already suffering from a new growth, such as an ovarian cyst or a uterine fibroid, might have the symptoms of her disease suddenly accentuated as the result of an accident. Thus, in the case of an ovarian cyst, torsion of the pedicle or rupture of the sac wall might be caused, whilst in the case of a fibroid the tumour might be torn away from adhesions with profuse internal hæmorrhage, or thrown back into the pelvis and become incarcerated there.

When such results of an accident are alleged, the case must be carefully considered. It might be contended that in consequence of the accident the patient had been forced to undergo an operative procedure which she might otherwise have escaped. If the tumour was an ovarian cyst, it must be remembered that there is a consensus of opinion on the part of all authorities that these tumours should be removed as soon as possible in any circumstances. With a fibroid tumour, on the other hand, the case is somewhat different, for there still exist medical men who advise leaving these tumours *in situ*, treating them by drugs or irradiation in preference to operating upon them. The large majority of authorities, however, are agreed that they had better be removed as soon as they give rise to symptoms. Hence the precipitation of the removal of the tumour is not in itself a wholly undesirable thing.

It might, however, be argued that, as a result of the accident, the operation was made more dangerous and painful and the convalescence prolonged. Such points as these would have to be decided on the particular features peculiar to the case.

Accidents in Relation to Miscarriage.—An accident or fright is a common cause of miscarriage. The points to be considered in dealing with such a case are—

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1. How soon did the miscarriage follow the injury ? Obviously the sooner the miscarriage occurs the more likely is it due to the alleged cause.

2. Has the woman miscarried before, and if so, how many times ? *Some women have the habit of aborting.*

3. Has the woman had syphilis ? and if so, is she uncured ? This is a common cause of abortion. The proper way to decide this is to have a Wassermann's test made.

4. Does the physical examination reveal any condition capable of causing a miscarriage, and if so, was that condition capable of being brought about by the accident or no ? Thus a retroversion of the uterus may have been caused by the accident (see p. 432), whilst on the other hand a fibroid, which is also sometimes a cause of miscarriage, could not.

5. Is there anything in the occupation of the woman that specially makes for miscarriage, such as employment in lead works ?

Accidents in Relation to Extra-uterine Gestation.—In a woman suffering from a tubal gestation, between the sixth and tenth week of pregnancy as a rule, sometimes earlier and sometimes later, the chorionic villi erode into a vessel in the tube wall, with a resulting hæmorrhage leading to tubal rupture or abortion.

Occasionally such a rupture or abortion has appeared to have been precipitated by some increased intra-abdominal tension due to a fit of laughing, coitus, etc. In one case within our knowledge it was contended that such a rupture, followed by a prolonged illness from a pelvic hæmatocele, was due to the woman tripping over a carpet which had been improperly laid on the stage. It may be that in some particular case such an accident would lead to rupture or abortion, but it must be remembered that this would only anticipate by a short time a similar occurrence or something worse, since if rupture does not take place the ovum will " erode " through the tube and form an abdominal or intra-ligamentary gestation. It might be contended that perhaps the ovum would have died, and been absorbed without any further complications, but this is so extremely rare that to anticipate it and withhold an operation would be, in almost every case, courting disaster.

Fracture of the Pelvis.—Fracture of the pelvis may result in the formation of callus, the presence of which might presumably lead to difficulty or obstruction in labour. Another example of injury would be fracture of the floor of the acetabulum, with indriving of the head of the femur.

If a practitioner was called in to give an opinion on such a case, he should by careful measurements, digital investigation, and X-ray examination exclude the recognized forms of contracted pelvis, because it would be possible, for instance, for a patient with a flattened pelvis, which in

itself would be sufficient to obstruct labour, to meet with an accident fracturing her pelvis and to have an obstructed labour afterwards, the obstruction being due to the original malformation and not to the fracture.

The pelvis of a young girl may be fractured, and, if she recovers, an action at law may be brought to recover damages on the assumption that when she becomes pregnant her life and that of her child may be endangered by some malformation resulting from the fracture. We know of no " judgment " on the matter, but one of us was called to give evidence in such a case in which the plaintiff had claimed damages immediate and remote. As the plaintiff was non-suited in her claim for immediate damages, the point we are now dealing with was not presented to the jury for a verdict and no judgment was pronounced thereon.

In considering such a question two points arise :—

1. Is the patient likely to become pregnant ?
2. If the patient becomes pregnant, is the malformation such that the birth of a living child would be impossible without Cæsarean section ?

With regard to the first point, in the cases that have been reported of fracture of the pelvis which have recovered, most of the women have been sterile, though some have subsequently given birth to live children without any reported difficulty.

With regard to the second point, an X-ray examination must be made and the skiagram carefully examined. In some cases it will at once be evident that the malformation is such that the birth of a live child, except by Cæsarean Section, would be impossible.

In other cases if the fracture involves any of the centres of ossification, the practitioner will have to form his own judgment as to the likelihood of the pelvis not being properly developed.

Lastly, the malformation may be slight and of such a kind that it would be impossible to say, until pregnancy was far advanced, whether the head of the child could enter the pelvis or not.

Accidents in Relation to Disfigurements.—Disfigurements, especially in a woman before marriage, may form the subject of legal proceedings. As far as we are concerned in this work we have only to consider disfigurements of a gynæcological nature. We have never been consulted in such cases, but it is possible that as the result of an accident the vulva might be injured and slough, with a resulting marked disfigurement or contraction of the vulval orifice sufficient, without an operation at any rate, to prevent coitus. The practitioner could only give evidence as to any alteration in the appearance of the vulva, or inability to pass a speculum of such a size as to show that coitus would be possible.

Accidents in Relation to Amenorrhœa.—An accident or fright

may be responsible for neurasthenia and depreciation of health which may lead to amenorrhœa.

If called upon to advise in such a case the practitioner would state this fact. By an examination of the patient, on the other hand, he may discover some other cause for the suppression of menstruation.

Effect of an Accident on the Fœtus.—A sudden shock will kill the fœtus *in utero*. As there may also be other conditions present, such as syphilis or albuminuria, which are causes of fœtal death, these must be excluded before an opinion can be given.

It may also be contended that an accident to the mother had caused some malformation in the child. Such a contention would be difficult to sustain, for all authorities are now agreed that malformations occur as a coincidence and not as a consequence of the particular supposed cause. This matter has been investigated very thoroughly, and the evidence conclusively proves that the percentage of malformations or birth-marks following accidents or unpleasant sights is extremely small, whereas their occurrence if due to such causes would be extremely common.

Burns from Hot-water Bottles.—If a patient is burnt with a hot-water bottle it may be sought to hold the practitioner or nurse liable, and damages may be claimed from one or other. The burns resulting from hot-water bottles are very severe and take weeks to heal, leading at times to great disfigurement from scarring.

The damage is done when the patient is unconscious or paralysed, and so cannot move the part being burnt away from the bottle. The practitioner should always remember to see that the hot-water bottles are never placed between the sheets next to the patient. They should be placed outside the upper blanket, and in addition should be covered with flannel, particular care being taken to protect the metal stopper.

The practitioner may be unaware of false charges brought against him in connection with these burns. It happened to one of us to have to employ swabs wrung out in boiling water to check oozing from a raw surface at the bottom of the pelvis. Months after, hearing indirectly that the patient had been in bed for over three months following the operation, an inquiry was made as to the reason. It appeared that the patient had been so badly burnt all down her thigh that a large amount of sloughing had resulted. The nurse, who by her carelessness with hot-water bottles had caused the burns, told the relatives that these were due to hot water trickling on to the thigh during the operation from the swabs that had been used to check the bleeding ! It did not seem possible that the doctor in attendance could have believed this story, but he thought that the " least said soonest mended," and the operator was blamed until such time as he had an opportunity of enlightening the relatives.

Consent to Operation.—A patient cannot be operated upon unless she consents, or—if she is unconscious—should not be except under circumstances of urgency, unless some responsible relative or friend gives consent. Such consent, however, does not necessarily imply that the patient thoroughly understands the nature of her operation, or at any rate of its results. In gynæcological practice, for instance, the removal of the ovaries or uterus will ensure sterility and the change of life ; of the uterine tubes, sterility. It is most unwise, therefore, for an operator to perform any operation of this nature upon a patient without telling her in the presence of a witness what will be the result, or, if she objects to a witness, without having consent in writing duly signed and witnessed. The omission of such precautions has led to a large amount of trouble in the past and will do so in the future. A patient will at times endeavour to limit the operation in some way, as, for instance, by forbidding the surgeon to remove more than one ovary. With such a limitation he would be wise if he refused to have anything to do with the case, since on opening the abdomen such a limitation may be impossible, one ovary perhaps requiring removal for disease and the other requiring to be removed to make the operation feasible, or both ovaries may be found diseased at the operation. If the operator, in spite of this warning, chooses to undertake the treatment of a patient with such restrictions he should certainly insist upon having the patient's wishes recorded in writing, so that if any complication occurs as the result of such restrictions he shall not be held liable.

Destruction of One Kidney.—A woman may have her kidney ruptured as the result of an accident, and it may have to be removed. The patient may claim damages for the original injury, or later, becoming pregnant and having an attack of pregnancy albuminuria, or pyelitis, contend that such an attack would be more dangerous. The latter contention would, we believe, be true, since pyelitis is usually unilateral.

Operation-posture Paralysis.—The forearm and hand may be paralysed if allowed to hang over the edge of the operating table so that the radial nerve is injuriously pressed upon.

The arm and shoulder may be paralysed if the shoulder-straps that are occasionally used to keep the patient in the Trendelenburg position are allowed to press on the brachial plexus.

The foot may be paralysed if with the patient in the lithotomy position the Clover's crutch is allowed to press on the peroneal nerve.

The leg may be paralysed if the popliteal nerve is pressed upon by the edge of the table when the patient is in the Trendelenburg position.

As a rule, sufficient care will prevent such complications, but if they occur the practitioner may be held liable.

Breach of Confidence.—It is a wise precaution for a practitioner not to tell an employer what an employee is suffering from without her leave.

Thus if he tells a mistress that her servant is pregnant he can be held liable for a breach of confidence. If a patient is suffering from syphilis or gonorrhœa she is a distinct danger to those she is brought in contact with through the medium of drinking-glasses, cups, forks, spoons, towels, etc., which may be used by others. With this knowledge the practitioner may refuse to treat the patient unless she gives him leave to warn her employers.

X-ray Treatment.—The treatment of uterine hæmorrhage by X-rays has been discussed on page 295. There are certain definite drawbacks associated with this treatment, for it is probable that the method of cure is brought about by destruction of the ovaries. Again, unless great care is taken the abdominal wall may be seriously burnt, the ulcers resulting therefrom taking months to heal and perhaps years afterwards becoming carcinomatous. If, therefore, a practitioner proposes to treat a patient with X-rays he should explain that the treatment will probably result in the change of life. The patient should also be requested to sign a form acknowledging that these facts have been explained to her.

Indecent Assault.—A practitioner should remember that if he examines a woman without another person being present he runs the risk of being accused by designing persons of indecent assault.

In this matter it is difficult to lay down any hard-and-fast rule. Many women refuse to be examined in the presence of a third party, especially in such circumstances as illegitimate pregnancy, venereal disease, etc.

A medical man should certainly refuse to examine alone any girl under sixteen years of age, and in general he would be wise to exercise circumspection before he examines any young unmarried woman without a third party being present, for it is well known that young females have on many occasions fabricated the most reckless and wicked charges against medical practitioners. It is important also for the doctor in his own interests to make very careful notes at the time concerning the reasons that have sent the patient to him, for it has happened that, when the false charge of assault has been brought, the complainant has denied that she consulted the doctor for any complaint having a gynæcological aspect.

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